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ORGAN OF THE AMERICAN ASSOCIATION OF THE HISTORY OF MEDICINE
AND THE JOHNS HOPKINS INSTITUTE OF THE HISTORY OF MEDICINE

Founded by HENRY E. SIGERIST

Editor—OWSEI TEMKIN

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REMARKS UPON THE INTRODUCTION OF INOCULATION FOR SMALLPOX IN ENGLAND *

RAYMOND PHINEAS STEARNS

With the Assistance of

GEORGE PASTI, JR.

So much has been written on the subject of inoculation for smallpox that it appears desirable to explain the object of these remarks. It can be stated very briefly: to attempt to explain by whom or by what means the knowledge and the practice of inoculation for smallpox were introduced into England.[1] The purpose at hand, then, is limited, and no effort shall be made to treat of the controversies aroused by the practice of inoculation, or to trace the extent of the practice, or to set forth the variety of techniques developed in the course of the eighteenth century—except in so far as these latter questions cast light upon the subject at hand.

* The University of Illinois.

[1] It appears to be widely assumed that *knowledge* of the art of inoculation for smallpox was introduced first into England from whence it spread into western Europe. Actually, close examination of the sources seems to show that the *knowledge* of the art became the property of medical practitioners almost simultaneously in England, Italy, France, the Germanies, and Scandinavia. But it also appears that the English set the example in the *practice* of inoculation, and by their reported successes the Continentals were encouraged to follow suit.

Even a brief consultation with the historians of medicine will reveal the lack of agreement among them as to the means whereby inoculation for smallpox became known in England. If one views the accounts analytically, three distinct explanations occur as to these means, sometimes appearing singly, sometimes in poorly related pairs, and sometimes in wholly undigested trios. Briefly stated, the three accounts are as follows: 1. That inoculation for smallpox was a popular practice among people of the "common sort" from "time immemorial," known to Asiatics, Africans, Scandinavians, French, Italians, Welsh, and Scots and spreading by a kind of social osmosis at a rate far slower than the contagion of smallpox itself.[2] 2. That both the knowledge of inoculation and the practice of the art were introduced into England by Lady Mary Wortley Montagu with the endorsement of Princess Caroline and a few others of the drab court of George I.[3] 3. That knowledge of the art of

[2] This explanation is widely used, usually in conjunction with one or another of the others, and, in a few cases, with both. See, for example, F. H. Garrison, *An Introduction to the History of Medicine* (4th ed. Philadelphia, 1929), pp. 372-73; Charles Singer, *A Short History of Medicine* (New York, 1928), p. 183; Roswell Park, *An Epitome of the History of Medicine* (2nd ed. Philadelphia, 1906), p. 225; J. G. Mumford, *A Narrative of Medicine in America* (Philadelphia, 1903), p. 47; E. M. Crookshank, *History and Pathology of Vaccination* (2 vols. London, 1889), I, 34-35; Kurt P. Sprengel, *Histoire de la Médecine, depuis son Origine jusqu'au dix-neuvième Siècle* (First published at Halle, 1792-1803; trans. by A. J. L. Jourdan, 6 vols. Paris, 1815), VI, 34-37; *Dictionnaire Encyclopédique des Sciences Médicales* (5th ser. Paris, 1886), II, 476-78; T. Tronchin, "Inoculation," in *Encyclopédie* (ed. by D. Diderot and M. le Baron D'Alembert, Neuchastel, 1765), VIII, 775-771; Voltaire, "Lettres sur les Anglais, ou Lettres Philosophiques," in *Œuvres Complètes de Voltaire* . . . (54 vols. Paris, 1876), V, 14; Victor C. Vaughan, "Smallpox Before and After Edward Jenner," in *Hygeia*, I, No. 4 (July, 1923), pp. 205-11; Charles Greene Cumston, "Historical Notes on Smallpox and Inoculation," in *Annals of Medical History*, VI, No. 4 (Winter, 1924), pp. 465-69; A. H. Rowbotham, "The 'Philosophes' and the Propaganda for Inoculation of Smallpox in Eighteenth-Century France," in *University of California Publications in Modern Philosophy*, XVIII, No. 4 (Berkeley, 1935), p. 284, *passim*; A. C. Klebs, *Die Variolation im achtzehnten Jahrhundert. Ein historischer Beitrag zur Immunitätsforschung. Zur historischen Biologie der Krankheitserreger: Materialien, Studien und Abhandlungen*, (7. Heft, Giessen, 1914), pp. 7-8. Most of the secondary sources appear to follow Voltaire, the *Encyclopédie*, or Sprengel. Klebs expresses some doubt about the reports of the early popular use of inoculation for smallpox (*op. cit.*, p. 7).

[3] Lady Mary is given sole credit in: Logan Clendening, *Behind the Doctor* (New York, 1933), p. 205; H. S. Hartzog, Jr., *Triumphs of Medicine* (Garden City, N. Y., 1927), pp. 115 *ff.*; F. R. Packard, *The History of Medicine in the United States* (Philadelphia, 1901), p. 76; Paul F. and Alice Scheidt Clark, *Memorable Days in Medicine: A Calendar of Biology and Medicine* (Madison, Wis., 1942), p. 68; Arturo Castiglioni, *A History of Medicine* (trans. by E. B. Krumbhaar, 2nd ed. New York, 1947), p. 641; P. V. Renouard, *History of Medicine from its Origin to the Nineteenth Century* (trans. by C. G. Comegys, Cincinnati, 1856), p. 410; William Woodville, *The History of the*

inoculation came to England through the medium of the Royal Society of London, whose learned publication, *The Philosophical Transactions*, communicated it to the English-speaking peoples in a series of articles beginning in 1714, and that, after a few timid trials in England, reports of considerable successes in the Colony of the Massachusetts Bay fastened the practice firmly (though by no means universally) on the British medical profession.[4]

Now there appears to be sound historical evidence to support each of these three explanations, although some limitations will be noted below. That being true, relations of how the knowledge and the practice of inoculation for smallpox were introduced into England without citing all three accounts, with accurate attention to their chronology and to their interrelationships, leave much to be desired. To supply this want will be the intent of what follows.

As a virulent malady with a high rate of mortality, smallpox was relatively new to England in the seventeenth century. It first became prominent as a fatal disease in the reign of James I, assumed serious proportions early in Charles I's reign, and grew even more deadly as the century wore on.[5] It was peculiarly mortal to members of the royal

Inoculation of the Small Pox in Great Britain (London, 1796), pp. 82 *ff.*; R. T. Gunther, *Early Science in Oxford* (11 vols. in progress, Oxford, 1925), III, Pt. i, p. 74; Pearce Bailey, "Voltaire's Relation to Medicine," in *Annals of Medical History*, I (April, 1917), p. 67; Robert Hutchinson, "Medicine in Horace Walpole's Letters," in *ibid.*, n. s., VI, No. 1 (Jan., 1934), p. 61. Many others cite Lady Mary's role in conjunction with one or both of the other media: Garrison, *op. cit.*, pp. 372-73; Singer, *op. cit.*, p. 183; Park, *op. cit.*, p. 225; Mumford, *op. cit.*, p. 15; Crookshank, *op. cit.*, I, 32; *Dictionnaire Encyclopédique des Sciences Médicales*, II, 477-78; Voltaire, in *op. cit.*, V, 15-16; Rowbotham in *loc. cit.*, p. 284; A. C. Klebs, "The Historic Evolution of Variolation," in *Bulletin of the Johns Hopkins Hospital*, XXIV, No. 265 (March, 1913), p. 71.

[4] The accounts which appeared in *The Philosophical Transactions* are rarely set forth as the sole medium of communication. Klebs, in *Die Variolation im achtzehnten Jahrhundert* (p. 12), states that the epoch-making account of Timoni in 1713 is the basis for all European practice of inoculation until the mid-nineteenth century; but his shorter account in *The Johns Hopkins Hospital Bulletin* (*loc. cit.*) confuses the point and adds, without documentation, that Lady Mary Wortley Montagu knew of Timoni's article. See also, Garrison, *op. cit.*, pp. 372-73, 405; Sprengel, *op. cit.*, VI, 38; Crookshank, *op. cit.*, I, 33-34; Mumford, *op. cit.*, p. 48; Park, *op. cit.*, p. 225; Tronchin in the *Encyclopédie*, VIII, 755; Rowbotham, "The 'Philosophes,'" etc., in *loc. cit., passim*; the *Dictionnaire Encyclopédique des Sciences Médicales* (II, 478-79) mentions the articles in *The Phil. Trans.* but has their dates wrong. Cumston, "Hist. Notes on Smallpox Inoculation," in *loc. cit.*, and Vaughan, "Smallpox Before and After Edward Jenner," in *loc. cit.*, both refer to the accounts in *The Phil. Trans.*

[5] Charles Creighton, *A History of Epidemics in Britain* . . . (2 vols. Cambridge, 1891, 1894), II, 434-39. Similar developments took place in the English Colonies overseas. Cf. Dr. William Avery to Robert Boyle, Boston, Nov. 9, 1682, in *The Works of the*

family, visiting death to at least two of the children of Charles I, to Queen Mary II, and possibly some of the children of Queen Anne—not to mention others (like Queen Anne herself) who were badly pock-marked by the disease.[6] These facts threw the British medical practitioners into much dispute over the diagnosis, the nature, and the treatment of the malady. A widespread opinion prevailed that erroneous treatment was the cause of the increased mortality, and from the Restoration on the medical men of England were constantly alert to enlarge their knowledge and to improve their methods in treating the disease.[7]

It was at this time, possibly in response to anxious inquiries, that reports began to arrive in England, and in most of the commercial countries of Europe, of the practice of inoculation for smallpox. Ship captains, sailors, traders, consuls, ambassadors, missionaries, apothecaries, physicians, and others who had travelled to the Far East, the Levant, and the Gold Coast of Africa told of the interesting native practices of "ingrafting," "transplanting," "buying," and "inoculating" the smallpox nearly a quarter-century before any trials of the art were reliably recorded in England or in western Europe.[8] It was even asserted that similar practices were followed in the remote parts of Wales and in

Honourable Robert Boyle (6 vols. London, 1772), VI, 610-11; and Thomas Brattle to the Royal Society in 1711 as reported in the *Journal-Book* (Ms. in the Royal Society Library), XI, 275. Woodville (*op. cit.*, pp. 26-32) and some others trace smallpox in England to very early days, but it is clear that the disease was often confused with others and wrongly diagnosed. It is also clear that smallpox was a benign disease, looked upon as a child's ailment in England up to the seventeenth century, when in its more deadly form it came to be called the "new sickness."

[6] Creighton, *op. cit.*, II, 444.

[7] *Ibid.*, II, 445-62; see also, Charles Severn (ed.), *Diary of the Reverend John Ward* (London, 1839), pp. 236, 252-53; Walter Lynn, "On Dr. Sydenham's Works" (London, 1714) and "Reflections upon the Modern Practisers of Physick in Relation to Small Pox" (London, 1715) in *Tracts on the Small Pox* (British Museum 1174. h. 21/1-2). In 1672 Dr. Edward Bolnese, physician to Charles II, advised in smallpox cases "the hiring of nurses, fat ones for preference, to lie by the patients' side and keep them warm." *Smallpox, its Prevention, Treatment, History* (London, 1901), p. 65.

[8] The evidence is widely scattered, and much of it is cited in the secondary accounts already listed. See especially, Sprengel, *op. cit.*, VI, 34 *ff.*; Tronchin in the *Encyclopédie*, VIII, 755; Garrison, *op. cit.*, pp. 372-73; Klebs, *Die Variolation . . .*, pp. 7-10; Cumston, "Historical Notes on Smallpox and Inoculation," in *loc. cit.*; Rowbotham, "The 'Philosophes,'" etc., in *loc. cit.*, pp. 266 *ff.* Voltaire refers to the practice among "les femmes de Circassie de temps immémorial" (*Œuvres Complètes*, V, 14); and the articles in *The Phil. Trans.*, No. 339 (April-June, 1714), XXIX, 72 *ff.* and No. 347 (Jan.-March, 1716), XXIX, 393 *ff.*, give similar accounts. See also, Creighton, *op. cit.*, II, 471-74; "W. D." [William Douglass?], *A Dissertation Concerning Inoculation of the Small Pox* (Boston, 1722), p. 2.

the Scottish Highlands.[9] One of the most convincing of these reports from abroad occurred in a letter from Joseph Lister to Dr. Martin Lister, F.R.S., from Amoy, China, dated January 5, 1699/1700. The writer had opened a correspondence with Dr. Lister in the autumn of 1698 from Fort St. George, saying that, although he was "altogether unknown" to Dr. Lister,

> the desire I have of serving you, and the honour to be of your name, & presume belonging to your family, prompt me to tender you my hearty service in anything I am capable of in these parts of the world, my residence here & station (being of the Honourable [East India] Company's Service) in some measure qualifying me thereto.[10]

Subsequently, Joseph Lister sent specimens of plants, shells, and seeds from the Far East to enlarge Dr. Lister's collections in natural history. In the letter from Amoy, referred to above, after a brief paragraph describing his latest shipment of specimens, Joseph Lister wrote:

> You being a Member of the RS [Royal Society], I heartily wish my different Travells in these Eastern parts had enabled me to make any remarks worthy your private or the Publick Communication, but my Employment or incapacity has deprived me of any such observation. However, I have here in China been informed by Credible People of a thing I believe only practiceable in these parts, & therefore shall make bold to relate it to you, Viz., a Method of Communicating the Small Pox when and to whom they please, which they perform by opening the pustules of one who has the Small Pox ripe upon them and drying up the Matter with a little Cotton, which they preserve in a close box, & afterwards put it up the nostrils of those they would infect. The benefit they pretend by it is they can prepare the body of the Patient & administer it at what Season of the year or Age of the Person they think most proper.[11]

Dr. Martin Lister had been a Fellow of the Royal Society since 1671. He was also a Fellow of the Royal College of Physicians and Surgeons, was active in scientific affairs, conducted a lively scientific correspondence in England, to the Continent, to the Far East, and to the American Colonies, and was the author of several works on zoology and medicine, the latter including a tract on smallpox published in 1695.[12] It seems

[9] Creighton, *op. cit.*, II, 471-74. The reports of inoculation "with a kindly pock" in Wales and in the Scottish Highlands could hardly have been inoculation of *smallpox* in view of the brief history of that disease as a deadly epidemic in Great Britain. However, it may have been an effective preventative of smallpox, like the "cowpox" which Jenner observed in Wales a century later.

[10] *Lister Mss. 4*, fol. 80 (Bodleian Library, Oxford).

[11] *Lister Mss. 37*, fol. 15 (Bodleian Library, Oxford).

[12] *D.N.B.* Martin Lister, *Octo Exercitationes Medicinales; . . . VIII. De Variolis*

difficult to believe that he did not transmit his kinsman's account of inoculation for smallpox to his friends in the Royal College of Physicians or to the Royal Society, although there appears no direct evidence to prove that he did. Dr. Clopton Havers, however, another Fellow of the Royal Society, probably leaning upon other sources of information, did bring the Chinese practice to the attention of the Royal Society on February 14, 1699/1700, only about six weeks after the date of Joseph Lister's letter to his kinsman.[13] It is clear, then, that by 1700 a considerable number of Englishmen, including reputable medical men, were at least aware of the art of inoculation in spite of the fact that no one appears to have given it a trial. Reasons for the reluctance to employ it are not wholly clear as of that time, but the subsequent controversies over its use (in the 1720's) suggest that the early hesitation arose over doubts about the credibility of the reports, the efficacy of the practice, the legality of it under the laws of God and man, fear of the results, and the applicability of the method in England, where a different climate, a different diet, a different race, and possibly a different smallpox obtained.[14]

The scene now shifts to the Royal Society. In 1712 and early in 1713, Richard Waller, one of the Secretaries of the Society, launched a campaign to enlarge and enrich the Society's "philosophical correspondence" in foreign parts and in the English Colonies. He obtained ministerial approval for enlisting the aid of Her Majesty's ministers abroad to solicit correspondents at their respective posts,[15] and he opened philo-

(London, 1695); also published at Geneva, 1696, again in London, 1697, and in Richard Morton, *Opera Medica* (New ed. 4 vols. Leiden, 1737), II, after p. 161 (paged separately). See also *Lister Mss. 1, passim*; *Lister Mss. 2, passim*; *Lister Mss. 3, passim*; *Lister Mss. 34,* fols. 1, 5, 23, 35, 73-75, 202; *Lister Mss. 38,* fol. 38; *Ashmole Mss. 1816,* fol. 88 (all at Oxford); *Letter-Book* (Ms. in the Royal Society Library), IV, *passim; Sloane Mss. 3333-3339* (British Museum), *passim; Philosophical Transactions,* No. 117 (Sept., 1675), X, 399-400.

[13] *Journal-Book* (R. S. Library), X, 166. Further evidence of the English knowledge of the Chinese technique is found in the fact that when the Newgate prisoners were inoculated for smallpox as an experiment in 1721, one of them was inoculated by the "Chinese method," exactly as described by Joseph Lister. *Mr. Maitland's Account of Inoculating the Small Pox* (2nd ed. London, 1722), pp. 20-25; *Classified Papers 1660-1740* (Ms. in the Royal Society Library, "Inoculations,"), XXIII (2), No. 27; Creighton, *op. cit.,* II, 468-69.

[14] Dr. Peter Kennedy, writing to this point in 1715, said: "The greatest objection commonly proposed is, whether or not it hinders the Patient from being infected a second time." *An Essay on External Remedies . . .* (London, 1715), p. 155. See also the arguments given in William Wagstaffe, *A Letter to Dr. Freind. Shewing the Danger and Uncertainty of Inoculating the Small Pox* (3rd ed. London, 1722), *passim.*

[15] *Letter-Book* (Ms. in the Royal Society Library), XV, 1-2, 4-9, 23-25.

sophical commerce with such persons as Anthony van Leeuwenhoek in the Netherlands, Cotton Mather and President Pierpont of Yale in New England, Dr. Thomas Hoy in Jamaica, and others elsewhere.[16] While this campaign was in progress, another serious epidemic of smallpox broke out, precipitating anew the bitter disputes over the treatment of patients,[17] and leading to discussion of cases at the meetings of the Royal Society. On October 22, 1713, Dr. Hans Sloane read a letter to the Society concerning a woman who had the smallpox, and in the discussion which followed

> Mr. Taylor said that Mr. Williams, who had long lived in Turkey, told him that the Small Pox, when it was of a favorable kind, was often propagated there by inoculating a Scab on Persons Sound, which communicated it to them, and that they had it after a favourable manner, upon which Dr. Sloane said he had known that distemper propagated from a person who had a favourable Sort to be of the worse kind and mortal.[18]

No direct evidence has been found to demonstrate that either Secretary Waller's campaign or discussions about smallpox in the Royal Society or elsewhere led to the communication from Constantinople which arrived in the following spring, although an interrelationship appears to have been both possible and likely. The fact remains, however, that on May 27, 1714, Dr. John Woodward communicated a letter to the Royal Society "from Dr. Emanuel Timoni, dated Constantinople, December, 1713, concerning the Inoculating the Small Pox . . . The Letter being pretty long, & in Latin, Mr. Waller promised an Extract of it the next meeting." [19] A week later (June 3) the translation of Dr. Timoni's letter was read to the Society,[20] and on June 10,

> The Reading of the Minutes gave a further occasion of Discourse of the procuring of the Small Pox by Inoculation. The Lord Bishop of Clogher Say'd that Mr. Townsend (Brother to the Lord Townsend), a Merchant who had lived some time at Constantinople told him about three years since being there he saw about 200 persons on whom the operation was made, two of which only dyed . . ., and that two of the said 200 were Dr. Timoni's sisters.[21]

Dr. Emanuel Timoni (or Timone) was no stranger to England or to

[16] *Ibid.*, XV, 14-15, 21-22, 44-47, 78-79; *Guard-Book W-3* (Ms. in the Royal Society Library), Nos. 72, 75-76, 78, 80, 83, 85.
[17] Creighton, *op. cit.*, II, 449.
[18] *Journal-Book* (R. S. Library), X, 512-513.
[19] *Ibid.*, X, 573.
[20] *Ibid.*, X, 576.
[21] *Ibid.*, X, 577.

the Royal Society. He held a degree from Oxford and a medical degree from Padua. He was known personally to some of the fellows of the Royal Society with whom he held a desultory "philosophical correspondence," and, in 1703, he had been elected a Fellow of the Society.[22] Probably he hoped to win some acclaim for his communication of the art of inoculation for smallpox into western Europe, for his "Account," dated December, 1713, was transmitted not only to Dr. Woodward in London but also at the same time to Dr. Gottfried Klaunig, of the *Academiæ Caesareo-Leopoldinæ Carolinæ Naturæ Curiosorum Ephemerides* at Nuremberg and to the editors of the *Acta Eruditorum* at Leipsic. The Royal Society was first to publish it, in *The Philosophical Transactions* for April, May, and June, 1714,[23] but the *Acta Eruditorum* followed suit later in the same year,[24] and the *Ephemerides Academiæ Caesareo-Leopoldinæ Carolinæ* of Nuremberg published it in its *Centuria V*, which, however, did not appear until 1717.[25]

It was unfortunate, however, that Dr. Timoni transmitted his account to Dr. John Woodward. Woodward was on bad terms with several of the Fellows of the Royal Society who found him vain, backbiting, and quarrelsome,[26] and his presentation of Timoni's account heightened their

[22] *The Record of the Royal Society of London* (4th ed. London, 1940), p. 389. For evidence of Timoni's scientific correspondence, see *Harleian Mss. 6943* (British Museum), fols. 142, 144; and *The Sherard Letters* (Royal Society Library), IV, fol. 466; V, fol. 625.

[23] No. 339. Vol. XXIX, 72-82. The original translation is preserved in the *Classified Papers 1660-1740* (Royal Society), XXII (2), No. 1; *Letter-Book* (Royal Society), XV, 87-92. The former copy has a few additions omitted in the printed copy in *The Phil. Trans.* Evidently Waller intended to publish Timoni's *Ætiologia* in translation and the editor decided to leave it in the original Latin.

[24] *Acta Eruditorum Anno MDCCXIV* (Leipsic, 1714), pp. 382-84. The extract is not identical with Waller's account in *The Phil. Trans.*

[25] *Academiæ Caesareo-Leopoldinæ Carolinæ Ephemerides . . . Centuria V et VI* (Nuremberg, 1717), Centuria V, "Observatio II." Both this account and that of the *Acta Eruditorum* suggest that Timoni may have circulated a book on the History of Inoculation. A fragment in the Royal Society Library (*Classified Papers 1660-1740*, XXIII (2), No. 72) suggests the same conclusion. If such a book existed, however, either printed or in Ms., it has not turned up.

[26] *D.N.B.* A large number of letters of the time testify to Woodward's difficult temperament and unpleasing personality. See, for example, Dawson Turner (ed.), *Extracts from the Literary and Scientific Correspondence of Richard Richardson . . .* (Yarmouth, 1835), pp. 39-40, 42, 50, 54, 73; and Woodward's letters to J. J. Scheuchzer well-illustrate his backbiting techniques ("Lettres des Anglois," *Ms. H. 293*, fols. 39, 43-44; *Ms. H. 294*, fol. 208 (Zentralbibliothek, Zurich). Sir Hans Sloane, whose generous philanthropy and extensive patronage gave him a deservedly fine reputation, was nevertheless not above pettiness and mean action in his relations with persons who criticized his policies, opposed his designs, or failed to show a plenitude of respect to his person. Perhaps, then, his dislike of Woodward, together with his coolness towards Sherard, led

suspicion and incredulity of it.[27] In consequence, the Fellows of the Society demanded confirmation of Timoni's relation, and, at the close of the discussion of his Account on June 10, "A Letter was ordered to be drawn up to be sent to Consul Sherrard at Smyrna to Desire the favour of his Information upon this Subject."[28] Accordingly, Secretary Waller addressed a letter to Dr. William Sherard on July 8, 1714, as follows:

> The Royal Society of London having lately had a letter from Dr. Emanuel Timoni, F. R. S., living at Constantinople, communicated to them concerning the Method of procuring the small-pox by a sort of Insition or inoculation, with a Description of the manner of the Operation and success of the Distemper in the Patients so affected; were pleased to order me their Secretary to address a Letter to your selfe to desire the favour of sending us what Informations you may have happened to meet with concerning this matter either at Smyrna or elsewhere.
>
> We understand this Practise was first brought to Constantinople about 40 or 50 years since by the Greeks and has, especially of late, bin made use of there with good success.
>
> It is needless to mention the Benefits of this Method, if it answers the character given of it; Wherefore, Sir, it is the Royal Society's desire that you please to send them the most exact and true account concerning this matter. As to the Method and success of the Operation, whether it answers the Relation we have of it, That the Patients have very few, and those without leaving any scars or disfiguring on 'he face, and that they are undoubtedly secured from ever Catching the Distemper again tho' ever so much exposed to the hazzard thereof.[29]

Dr. Sherard was somewhat impatient with the Society's incredulity, but he complied with its request. In June, 1715, Secretary Waller reported

him to omit all mention of Timoni's relation of inoculation and to take undue credit to himself in describing the introduction of inoculation for smallpox in England. See "An Account of Inoculation by Sir Hans Sloane, Bart., given to Mr. Ranby, to be published, Anno 1736. Communicated by Thomas Birch, D. D., Secret. R. S.," which was read to the Royal Society on February 19, 1756, and published in *The Philosophical Transactions*, XLIV, Part II (1756), pp. 516-20.

[27] Timoni himself appears to have been in trouble in Turkey in 1705 and may have been considered a doubtful source of reliable information. See Sutton's letter to William Sherard, Belgrade Village, Oct. 25, 1705, in *The Sherard Letters* (Royal Society), IV, fol. 466.

[28] *Journal-Book* (Royal Society), X, 578. The debate continued in the Society on June 17, when Dr. Cockborne reported that one Dr. Briscow, who had lived in Constantinople, confirmed Timoni's account. *Journal-Book*, XI, 1.

[29] *The Sherard Letters* (Royal Society), V, 647. Endorsed: "Rec. Aug. 30, 1714; Answ. March 7, 1714/5 & Jan. 31, 1715/6." The letter is copied in the *Letter-Book*, XV, 127-28. It was read before the Society on July 1, 1714, and approved to be sent. *Journal-Book*, XI, 9. For accounts of William Sherard, see the *D. N. B.*, and B. D. Jackson, "A Sketch of the Life of William Sherard," in the *Journal of Botany* for May, 1874. Mr. Pasti is at present preparing a biography of Sherard.

to the Society that Sherard had sent inquiries to Salonica and other places for information.[80] And in March, 1716, Dr. Sherard sent to his brother, James, who was in London and a Fellow of the Royal Society, a letter which read in part as follows:

> The Royal Society order'd their Secretary, Dr. Waller, to write to me, desiring me to send them what acct. I could of the manner and practise of engrafting the smallpox, which is the general custome at Stambole by Christians of all nations. Dr. Timoni, one of their members (who came into Engld. with my Ld. Paget), sent them an acct. of it in 1713, very fully & handsomely wrote, but they seem to give little credit to it, tho' it be matter of fact confirm'd by thousands of instances. 'Tis not yet put in practise here, but I'me told will be very speedily. Mr. Hefferman, chancellier & Secretary to our Ambassador, sent his 2 sons to London last month by the Stamboline, who have been engrafted, & they may view them, if they please, & observe whether they be attacked a second time. It not being the practise here, & no physitian in town that deserves that name, I wrote them I would get the best information I could, & in order to it had wrote to Salonica & Settalia, where I heard it was in use, & to Dr. Pilarino, late Venetian Consul here, with whom I had often discours'd about it. He very obligingly answered my Letter and promised to send me speedily the observations he had made on it, whilst he lived at Stambole, which he has lately done in print, dedicated to me as you'll see by the inclos'd, which you'll communicate as you think fit.[81]

The "observations . . . in print" to which Dr. Sherard referred was a pamphlet entitled *Nova et Tuta Variolas Excitandi per Transplantationem Methodus; Nuper inventa & in usum tracta . . . Per Jacobum Pylarinum*, published at Venice late in 1715, and dedicated to "Wilhelmo Serhad." On May 24, 1716, Secretary Waller reported to the Royal Society of a letter from Dr. Sherard enclosing Pylarini's "printed paper," and he added that "Dr. Sherrard says that a man that should doubt of the truth thereof at Smyrna would pass for a Grand Heretick."[82] Pylarini's account of inoculation for smallpox was promptly printed in *The Phi-*

[80] *Journal-Book* (R. S.), XI, 69. In the course of 1715, Peter Kennedy, a Scottish physician who had visited Constantinople, published an account of inoculation for smallpox as practiced there, protesting that: ". . . the veracity of what I have advanced is not to be doubted; since there are several Merchants, or Gentlemen, who having liv'd there, that know it to be a Truth. We in *Britain*, probably being more timorous and fearful of our lives in this Case, because of the great Mortalities which so frequently accompany this Distemper with us; tho' if this Method is so innocent as those who practice it assert or maintain it to be, it need be no more minded than as in giving or taking the Itch." *An Essay on External Remedies*, p. 156. Dr. Sloane appears to have been making inquiries about the practice on his own account about this time. See *Sloane Mss. 4061*, fols. 162-64 (British Museum).

[81] *The Sherard Letters* (R. S.), V, 625. Dated "Smirna, March 7, 1715/6."

[82] *Journal-Book* (R. S.), XI, 126.

losophical Transactions.[33] On the whole, it confirmed Timoni's account of the practice of inoculation for smallpox in Greece, although it was a more carefully worded statement, limited to the author's personal observations as a physician who had formerly practiced in Constantinople.

In view of the evidence in favor of inoculation, it is difficult to understand why no one in England had tested it by the time Pylarini's exposition in confirmation of Timoni's description became known. But such was the case, and, as Dr. William Douglass wrote in 1730, "the communications of Timonius and Pylarinus in England were regarded as Virtuoso-Amusements until April, 1721." [34] At this time a new impulse occurred which emboldened—or pushed—some English physicians into making trial of the method.

This impulse derived from a wholly amateur source, the unconventional and forward Lady Mary Wortley Montagu. Lady Mary accompanied her husband, Sir Edward Wortley Montagu, to Turkey in 1716 when the latter was sent on an embassy to the Porte. While in Turkish dominions she became familiar (in 1717) with the Greek practice of inoculation for smallpox.[35] In March, 1718, she had her six-year-old son, Edward, inoculated by the English physician to the Embassy, Dr. Charles Maitland,[36] and she would have had her daughter inoculated at the same time except for the fact that "her nurse has not had the smallpox." Lady Mary returned to England in 1718, evidently anxious to become the

[33] No. 347 (Jan.-March 1716/17), XXIX, 393-9. *The Phil. Trans.* omits the dedication to Sherard. The account also appeared, with the dedication, in *Ephemerides Academiæ Caesareo-Leopoldinæ Carolinæ . . . Centuria V et VI* (Nuremberg, 1717), pp. 13-20, immediately following the extract from Timoni. Both tracts were reprinted at Leiden in 1721 in *Tractatus Bini De Nova Variolas Per Transplantationem Excitandi Methodo; Quorum prior ex Veneto Exemplari fideliter hic reponitur; Alter vero ex Transactionibus Philosophicis Anglicano defumiter.*

[34] William Douglass, *A Practical Essay Concerning the Small Pox* (London, 1730), p. 67.

[35] See Lady Mary's letter to Sarah Chiswell, dated from Adrianople, April 1, 1717 (O. S.) in *The Letters and Works of Lady Mary Wortley Montagu, Edited by Her Great-Grandson, Lord Wharncliffe . . . and a Memoir by W. Moy Thomas* (2 vols. London, 1893), I, 307-309. Lady Mary gave a brief account of the technique, stated that she intended "to try it on my dear little son," and added: "I am patriot enough to take pains to bring this useful invention into fashion in England; and I should not fail to write to some of our doctors very particularly about it, if I knew any one of them that I thought had virtue enough to destroy such a considerable branch of their revenue for the good of mankind. But that distemper [smallpox] is too beneficial to them not to expose to all their resentment the hardy wight that should undertake to put an end to it. Perhaps, if I live to return, I may, however, have courage to war with them."

[36] *Ibid.*, I, 352-53. See also *Mr. Maitland's Account of Inoculating for Small Pox* (2nd ed. London, 1722), pp. 4, 7-9.

celebrated instrument for the introduction of smallpox inoculation into her native land.[37] There appears to be no evidence that she was familiar with the previous descriptions communicated by Timoni and Pylarini or with the other information on the subject which had been slowly accumulating in England for nearly a generation. But Lady Mary was in possession of something else of more immediate consequence, namely, the sympathetic ear and the beneficent patronage of Princess Caroline.[38] This excellent Princess, with the occasional advice of Dr. Hans Sloane, was one of the few "enlightened" souls who patronized science and the arts at the Court of George I. In the spring of 1721, when another epidemic of smallpox was raging in London, Lady Mary Wortley Montagu determined to have her daughter inoculated against the disease. Dr. Maitland—the same who had inoculated Lady Mary's son in Turkey—was called upon to perform the operation, which attracted wide attention among both courtiers and the College of Physicians.[39] The operation was successful, and a few weeks later (May 11, 1721) Dr. Maitland also inoculated the son of Dr. Keith.[40] The success of these two cases enlisted the active support of Princess Caroline, who persuaded the King to remit the lives of six felons in Newgate Prison if they would submit to inoculation. In consequence, three men and three women were inoculated by Dr. Maitland in August, 1721.[41] A similar trial followed with ten children from the charity ward of the Parish of St. James, this, too, with Princess Caroline's intercession and with success. And, on April 17, 1722, Their Highnesses, the Princesses Amelia and Carolina, daughters of Princess Caroline, were inoculated by Dr. Claude Amyand, Principal and Serjeant Surgeon in Ordinary to His Majesty, under the watchful eyes of Dr. Hans Sloane.[42] With the adoption of inoculation for smallpox in such high circles, one might suppose that the future of the practice would have been assured in England.

However, neither the benign trials of 1721 nor the royal adoption in

[37] See the article on Lady Mary in the *D. N. B.* and the "Memoir" by W. Moy Thomas in *op. cit.*, I, 1-48, 88-89.

[38] W. H. Wilkins, *Caroline the Illustrious, Queen Consort of George II and Sometime Queen-Regent* (2 vols. New York, 1901), II, 154-55.

[39] *Mr. Maitland's Account . . .*, p. 9.

[40] Creighton, *op. cit.*, II, 467-69.

[41] *Mr. Maitland's Account . . .*, pp. 20-25; Creighton, *op. cit.*, II, 468-69. For manuscript accounts, see *Sloane 4034*, fols. 9-21; *Sloane 3329*, fols. 28-33; *Sloane 4076*, fol. 96 (British Museum).

[42] *Classified Papers 1660-1740* (R. S.), XXIII (1), "Inoculations," No. 1; Creighton, *op. cit.*, II, 469; *Sloane 4076*, fol. 331 (British Museum).

1722 overcame the doubts of those who opposed inoculation for smallpox. Even Dr. Sloane, who was generally more receptive to novelties than most of his colleagues, reported the trials on the Newgate prisoners to the Royal Society with the warning that it still remained to be proved that the operation conferred immunity to smallpox.[43] The deaths of two persons (the Earl of Sutherland's son and Lord Bathhurst's footman) inoculated soon after the royal princesses in 1722 precipitated heavy condemnation of the practice and temporarily stayed the hands of those who would have pushed forward.[44] The Reverend Mr. Edmund Massey, of St. Alban's in Woodstreet, in a sermon which was printed as *A Letter to Dr. Maitland*,[45] quoted copiously from Holy Writ to prove the ungodliness of inoculation. Mr. Isaac Massey, apothecary to Christ's Hospital, in a pamphlet which reached its third edition in less than nine months, argued that inoculation was a dangerous operation and that no proofs existed to show that it conferred immunity from smallpox.[46] And Dr. William Wagstaffe, Physician at St. Bartholomew's Hospital, Fellow of the Royal College of Physicians and Surgeons, and Fellow of the Royal Society, in an even more rapid-selling pamphlet,[47] insisted that too little evidence existed to demonstrate either the safety of the operation itself or the certainty of its capacity to give immunity to smallpox. Dr. Wagstaffe further insisted that the Newgate prisoners, whose inoculation he had observed, had had reactions in no way resembling smallpox; he referred to the practice as "an artificial way of depopulating a countrey," suggested statutes to prove its illegality, hinted darkly of parliamentary action to stop it in the near future, and added:

> Posterity perhaps will scarcely be brought to believe that a Method practised only by a few *Ignorant Women*, amongst an illiterate and unthinking People should on a sudden, and upon a slender Experience, so far obtain in one of the most Learned and Polite Nations in the World as to be received into the *Royal Palace*.[48]

There is little cause to believe, then, that the scanty, timid trials of inoculation for smallpox in England during 1721 and 1722—forced, one might say, upon a doubting and bitterly divided group of medical prac-

[43] *Journal-Book* (R. S.), XII, 163 (Nov. 16, 1721).

[44] Creighton, *op. cit.*, II, 469; see also *Tracts on Small Pox 1685-1756* (British Museum, 1166. h. 9), *passim*.

[45] London, 1722.

[46] Isaac Massey, *A Short and Plain Account of Inoculation* (London, 1722).

[47] *A Letter to Dr. Freind. Shewing the Danger and Uncertainty of Inoculating the Small Pox* (London, 1722). Dated Oct. 22, 1722, this pamphlet was in the third edition before March, 1723.

[48] *Ibid.*, pp. 4-5, 27.

titioners and highly discredited by the deaths of a few persons inoculated—would have firmly established the practice of inoculation in the country but for the timely, well-authenticated reports of a wider, successful experience in New England. The bold experiments of Dr. Zabdiel Boylston in Boston with the courageous support of the Reverend Mr. Cotton Mather, F. R. S., were circulated in England just in time to stiffen and sustain the wavering case for inoculation. The New England experience has been too well described to require further elucidation here.[49] The earliest reports of Dr. Boylston's inoculation reached England in the autumn of 1721, and by 1723 the evidence from the New World had so multiplied, and was so well attested, that it went far to meet the demands of such English critics as Mr. Massey and Dr. Wagstaffe for evidence regarding the safety of the operation and the immunity conferred by it. One of the early reports from New England—evidently the first to reach the Royal Society—came from Dr. William Douglass, of Boston, who was opposed to the "rash practice." Nevertheless, in a letter to Alexander Stuart, which was read before the Royal Society on November 16, 1721, Dr. Douglass wrote that "we had in all to this time [*i. e.*, to Sept. 25th] had above 60 persons inoculated of all ages, sexes, & conditions, one or two have dyed." [50] In April, 1722, a more complete description of the New England experience in 1721 was transmitted to the Royal Society by Henry Newman of the Middle Temple, probably from the hand of his friend, Paul Dudley.[51] Newman enclosed "printed papers . . . on the subject of inoculation of the small pox as they have been published in New England for and against that practice;" he also described the methods employed (which had been adapted from the methods described in *The Philosophical Transactions* by Timoni and Pylarini), and he praised the results highly. In the course of 1723 the Royal Society heard three fulsome accounts of the New England trials of inoculation, complete with statistics. The first was by Captain John Osborne of Roxbury, who, with his wife, had been inoculated in Boston

[49] See especially, Reginald H. Fitz, "Zabdiel Boylston, Inoculation, and the Epidemic of Smallpox in Boston in 1721," in *Bulletin of The Johns Hopkins Hospital*, XXII, No. 247 (Sept., 1911), pp. 315-27; John T. Barret, "The Inoculation Controversy in Puritan New England," in *Bulletin of the History of Medicine*, XII, No. 1 (June, 1942), pp. 169-90; and Michael Kraus, "American and European Medicine in the Eighteenth Century," in *ibid.*, VIII, No. 4 (April, 1940), pp. 679-95.

[50] *Guard-Book D-2* (R. S.), No. 2; *Letter-Book* (R. S.), XVI, 214-15.

[51] *Letter-Book* (R. S.), XVI, 253-56; *Journal-Book* (R. S.), XIII, 183-85. Newman's "Way of Proceeding in the Small Pox inoculated in New England" was printed in *The Phil. Trans.* for January-March, 1722/3 (No. 370, XXXII, 33-35).

(read to the Society on January 31, 1722/3);[52] the second was from the Reverend Mr. Benjamin Coleman of Boston (read to the Society by Henry Newman, May 16, 1723);[53] and the third was from the Reverend Mr. Cotton Mather, F. R. S., on "The Case of the Smallpox Inoculated further Cleared" (read to the Society on December 19, 1723).[54] The importance of these reports, together with the printed accounts and others circulated by private hands can neither be overlooked nor their timely impact upon the English scene ignored.[55] New England supplied much evidence of the success of inoculation which circumstances denied Englishmen the opportunity to obtain for themselves and yet, without which, the case for inoculation could hardly have been sustained or the practice extended in England.

Still one further factor must be noted in the firm establishment of the practice of inoculation for smallpox in England. This was the role assumed by Dr. James Jurin in collecting and publishing statistical data on both the incidence and mortality of smallpox contracted in the "natural way" and the extent and success of inoculation for the disease. Dr. Jurin was a physician of excellent training and repute, prominent in the London College of Physicians and in the Royal Society, to which he had been elected Fellow in 1717 and served as one of its Secretaries from 1721 to 1727.[56] Though obviously in favor of inoculation for smallpox, Dr. Jurin set himself up as an unbiased mediator who would "let the facts speak for themselves" in the disputes over that practice. His position as Secretary of the Royal Society supplied him with an excellent vantage ground, and, although there is no evidence that he acted officially, in the name of or in the behalf of the Royal Society, his activities were clothed with the prestige of his post.[57]

[52] *Letter-Book* (R. S.), XV, 36-63; *Journal-Book*, XIII, 254-55. Osborne reported that of 280 persons inoculated between May 21, 1721, and April, 1722, only 5 died; whereas of about 6050 persons who had the smallpox in the "natural way," between 700 and 800 died.

[53] *Journal-Book*, XIII, 287-88. Coleman reported that 5889 persons had had the smallpox in Boston between May, 1721, and January, 1722, of whom 844 died; and that 147 persons had been inoculated in Boston in the same period, of whom 3 died.

[54] *Classified Papers 1660-1740*, XXIII (2), "Inoculations," No. 31; *Journal-Book*, XIII, 388.

[55] The New England reports were widely circulated in England among the members and the numerous correspondents of the Royal Society, not only by means of *The Phil. Trans.*, and other printed sheets, but also by letters. See, for example, Hans Sloane's letter to Dr. R. Richardson, Nov. 28, 1721, retailing Douglass' report read to the Society on Nov. 16 in *Mss. Radcliffe Trust C. 4*, fols. 54-55 (Bodleian Library, Oxford).

[56] *D. N. B.; Record of the Royal Society*, pp. 342, 394.

[57] He directed his correspondents, "Please send all information for the entire year to

Dr. Jurin began his self-imposed task with "A Letter to the Learned Dr. Caleb Cotesworth . . . Containing a Comparison between the Danger of Natural Small Pox and of that given by Inoculation," which was published in *The Philosophical Transactions* for November-December, 1722.[58] In this "Letter" Dr. Jurin compared the combined experience in inoculation for England and New England with mortality reports on smallpox contracted in the "natural way," adding a postscript to incorporate the evidence from Captain John Osborne which, as it appeared to him, corroborated previous reports of the New England inoculations. In January, 1723, Jurin communicated to the Royal Society a revision of this "Letter" with still more up-to-date information.[59] About six weeks afterwards (February 20, 1722/3), Jurin addressed a second *Letter to the Learned Caleb Cotesworth* [60] in which he set forth a method which he

Dr. Jurin, Secretary of the Royal Society in Jan. or Feb. next;" and his critics assumed that he was acting for the Society. See Jurin, *An Account of the Success of Inoculating the Small Pox for . . . the Year 1724* (London, 1725), advertisement on back flyleaf; and Isaac Massey, *A Short and Plain Account . . . To which is added, A Letter to the Learned James Jurin* (2nd ed. London, 1723), p. 7.

[58] No. 374, XXXII, 213-27.

[59] *Journal-Book* (R. S.), XII, 310-12 (Jan. 17, 1722/3); XIII, 245-47.

[60] London, 1723 (British Museum 1174. h/8. 22). Jurin's "Extract of a Letter from the Revd. Mr. Coleman of Boston in New England to Henry Newman . . . dated March 8th 1722/3" in the Royal Society Library (*Classified Papers 1660-1740*, XXIII (1), "Inoculations," No. 35) contains a good sample of his method in operation:

"Some honest & appointed men have gone from house to house Thro' the Town, & made the following report:

Had the Small Pox in Boston in the Natural Way	5742
Of these died	841
Inoculated in the Town	147
Of these died	3
Inoculated in the neighbouring Towns	
By Dr. Boylston	98
Of these died	4
By Dr. Thompson	about 30
By Dr. Roby	7 or 8

So that seven were all that died after Inoculation in Town or Country. Of five of these he gives much the same account as had been given by Capt. Osborne, but was not acquainted with the particular circumstances of the other two." Added on the left margin are the following calculations: 5742 : 841 :: 6 : 8 : 1

147
98
30
7

282

282 : 7 :: 40+ : 1

proposed to follow—and did pursue with diligence for the next five years. After discussion of the arguments used for and against inoculation, Dr. Jurin expressed the wish that the question "may be fairly and maturely examined, . . . without Passion, Prejudice, or private Views."[61] To this end, he added that the mortality tables from 1667 to date showed that one person had died out of every fourteen who contracted smallpox in the natural way, whereas, of persons inoculated, the statistics showed that only one out of ninety-one had perished, or, in New England, where the experience was wider, the proportion was one out of sixty. The accuracy of these statistics, however, left much to be desired and, therefore, Dr. Jurin added:

> There is another method which, if it were put in practice in several large Towns, or Parishes, and for a sufficient number of years, would enable us to come to a nearer and still more certain Computation of the Proportion between those that recover and those that die of the Small Pox; which is to send a careful Person once a year from house to house to enquire what Persons have had the Small Pox, and how many have died of it, in the preceding year.[62]

With these house-to-house canvasses Dr. Jurin proposed to compare the results of all cases of smallpox inoculation, and to this end he invited all persons who practised inoculation in England or elsewhere to supply him with well-attested details as to the name, age, sex, location, and the course of the "Distemper" following upon the inoculation of each person who submitted to the operation in the course of a year. "It is, Madam, by such an Account that the Practice of Inoculation must stand or fall," he wrote in his "Dedication" to Princess Caroline of *An Account of the Success of Inoculating the Small Pox in Great Britain with a Comparison between the Miscarriages in that Practice and the Mortality of the Natural Small Pox* (1724).[63] Dr. Jurin emphasized that he sought to stand clear of controversy, that he proposed to adhere to facts "with the greatest Impartiality," and that he intended, "God willing," to continue to collect data from year to year

> 'till the Practice of Inoculation shall either be established on a firm and lasting Foot, or shall be justly exploded; the Fate thereof being, as I conceive, only to be determined by Matter of Fact and Experience faithfully related.[64]

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[61] Jurin, *A Letter to . . . Cotesworth* (1723), p. 4.
[62] *Ibid.*, pp. 15-16.
[63] London, 1724.
[64] Jurin, *An Account of the Success of Inoculating the Small Pox* (1724), p. 2.

Dr. Jurin further emphasized that he desired "the most authentic accounts, . . . bad as well as good," and his "Advertisement," which was widely circulated to solicit the cooperation of inoculators, repeated this request:

> All Persons concern'd in the Practice of inoculating the Small Pox are desir'd to keep a Register of the Names and Ages of every Person inoculated, the Places where it is done, the Manner of the Operation, the days of sickening and of the Eruption, the Sort of Small Pox that is produced and the Event.
>
> Where the true Small Pox is not produc'd by Inoculation, it will be of Use to take particular Notice, whether the Patient had any Kind of Eruption, what Symptoms preceded or attended it, whether the Incisions inflam'd and run, and for what Time their Running continu'd.
>
> In Case any Person shall happen to die after Inoculation, either in the Course of the Small Pox, or after they are gone off, it is desir'd that a particular Relation of the Case may be made, and attested, if it be judg'd necessary, by the nearest Relations of the Party deceas'd, or by other credible Persons that were Witnesses to the Fact.
>
> They are intreated to send these Accounts, or an Extract from them, comprehending all Persons inoculated from the Beginning to the end of the present year, to Dr. Jurin, Secretary to the Royal Society, some time in January, or at the farthest in February next, that so the Result of them may be published early in the Spring.[65]

Dr. Jurin's methods of comparison left much to be desired. Apart from the fact that his data were imperfect, doubtless "loaded" in favor of inoculation, he made no adjustments to account for possible differences in age or other conditions and circumstances between the groups compared. This latter point was pointed out clearly by Isaac Massey in 1727.[66] But Jurin's appeal mobilized the efforts of inoculators throughout Britain, and his annual *Accounts of the Success of Inoculating the Small Pox,* which continued until 1728, went far to disarm those critics

[65] *Ibid.,* back of back flyleaf. Essentially the same "Advertisement" appears in the same location in Dr. Jurin's *Account . . . for . . . the Year 1724* (London, 1725), in his *Account . . . for . . . 1725* (London, 1726), in his *Account . . . for . . . 1726* (London, 1727), and in his *Account . . . for . . . 1727* (London, 1728).

[66] Isaac Massey, *Remarks on Dr. Jurin's Last Yearly Account of the Success of Inoculation* (London, 1727), p. 6. Massey wrote that Jurin's "tender and palliating Ways of speaking and acting . . . betoken more zeal than, strictly speaking, belongs to an Historian," and went on to suggest that a fairer comparison could be made of control groups of, say, twenty persons in each of two groups distributed equally as to sex, age, and other circumstances. If one group were inoculated and the other group permitted to contract smallpox naturally, Massey claimed that the latter group would fare the better. Massey had a sound criticism of Jurin, but it came too late to undermine Jurin's propaganda and appears to have attracted little notice.

who, from 1721 to 1723, were threatening to destroy the practice by legal action. The *Classified Papers* in the Royal Society Library include two large volumes of manuscript replies to Dr. Jurin's appeals,[67] and there are others scattered about in the *Sloane Papers* in the British Museum, and elsewhere. They consist of reports, often remarkably detailed and frequently attested by witnesses, of the inoculation of nearly a thousand persons in England, Wales, Ireland, and a few in Hanover—not to mention the New England data. These reports, supplied by court physicians, provincial doctors, Cambridge professors, apothecaries, artisans, and farmers, often begin, "Having some time ago seen an advertisement in your name in one of the papers, . . . I gladly embrace this opportunity of assisting in so laudable a design."[68] And they go on to relate the cases of smallpox inoculation the writers have attended, more or less in accordance with Dr. Jurin's instructions. Moreover, a number of the replies contain such house-to-house canvasses as Dr. Jurin had proposed of those persons who had had the smallpox in the natural way as, for example, for York and a few outlying parishes, for Leicester, for Salisbury, for Haverfordwest, and elsewhere. Out of this mass of data Dr. Jurin combed the materials for his annual *Accounts*, demonstrating statistically that persons who contracted smallpox in the natural way died at rates varying from one in every six to two in every eleven, whereas persons who were inoculated succumbed to the operation only at rates varying from one in every forty-eight to one in every fifty-two. Moreover, the evidence told of hundreds of persons who, having been inoculated, had been repeatedly exposed to smallpox without contracting the disease. However unscientific Dr. Jurin's methods may have been, his *Accounts* constituted powerful propaganda in favor of inoculation. Opponents of the practice were not universally won over, and only a very small segment of the total population had been inoculated for smallpox by 1728. But the practice of inoculation for smallpox had been vindicated.

By whom or by what means were the knowledge and the practice of inoculation for smallpox introduced into England? Surely enough has been said above to demonstrate that the credit must be divided among many hands whose labors extended through a generation or more. Is it possible, in the light of the evidence set forth, to ascribe the credit to any single person or organization? We believe not. Like so many events in human experience, the introduction of inoculation for smallpox to

[67] *Classified Papers 1660-1740* (Royal Society), XXIII (1), "Inoculations."
[68] *Ibid.*, No. 70.

England was the result of a variety of forces and the efforts of scores of individuals, no one of which can be set apart, or above, the others. Moreover, the introduction of smallpox inoculation appears to have been closely related to the history of smallpox epidemics in England, and even the extension of the practice in the 1720's and afterwards appears to have been in direct proportion to the frequency and to the severity of the epidemics of the disease.[69] By way of recapitulation, however, it may be useful to suggest that the introduction of inoculation for smallpox into England was in fairly well defined episodes which unfolded in the following order: 1. From about 1675 to 1714 rumors without definite knowledge of the art of inoculation excited interest in England. 2. Between 1714 and 1721, the rumors were verified to the extent that Englishmen were convinced that inoculation actually took place in other lands and they learned how the operation could be performed; but they were not satisfied of its efficacy for Englishmen. 3. From 1721 to 1728 timid trials led to heated controversies over results and threats of outlawry until a small but successful experience, effectively advertised, fastened the practice of inoculation firmly in England.

[69] This fact is repeatedly observed by Jurin's informants. Dr. J. G. Scheuchzer, who assisted Sloane in various capacities in the late 1720's, undertook to continue Dr. Jurin's survey after 1728, but gave it up after a year. See *Sloane 406 B.*, fols. 2-4, 45-91; *Sloane 4034*, fols. 23-29 (British Museum).

LEPROSY AMONG SCANDINAVIAN SETTLERS IN THE UPPER MISSISSIPPI VALLEY, 1864-1932 *

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In the 1860's leprosy appeared among Norwegian immigrants in the Upper Mississippi Valley in numbers sufficient to cause marked concern among those preoccupied with public health and preventive medicine in the Midwest. Unlike other diseases imported into this part of the country, e. g. malaria and cholera, leprosy fortunately never became an actual public health problem. The disease, so successfully implanted elsewhere during these times, never took roots in the Upper Mississippi Valley.

This experience appears to be interesting enough to justify an accumulation and analysis of the widely scattered data concerning this problem. In view of the many gaps which exist in our knowledge of the epidemiology of leprosy it is hoped that the riddles presented by this historical paper may serve as a modest stimulus to actual leprosy research.[1]

Norwegian Immigration to America

The earliest important Norwegian immigration to America occurred during the summer of 1825. At this time, 52 stalwarts set sail in a 40-ton sloop, "The Restaurationen" from the Stavanger district on the southwestern coast of Norway. Their destination was New York.

The main reasons for this exodus were religious and economic: several

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Dr. T. C. Blegen of the University of Minnesota was most generous in answering questions and giving suggestions concerning the problems of early Norwegian settlers.

The author is equally indebted to his former teacher, Dr. Erwin H. Ackerknecht, for his interest and advice in the preparation of his manuscript.

[1] For purposes of general orientation in the history of leprosy, the following works may be mentioned:

Hirsch, A., *Handbook of Geographical and Historical Pathology.* Volume 2, pp. 1-58. 1885. New Sydenham Society, Volume 112.

Scott, H. H., *A History of Tropical Medicine.* Volume 1, pp. 570-648. 1939.

Newman, G., *Prize Essays on Leprosy.* 1885. New Sydenham Society, Volume 157.

Clemow, F. G., *The Geography of Disease.* 1903.

of these emigrants were Quakers, all were Quaker sympathizers. The Quaker religion, which appeared in Norway following the Napoleonic Wars, had been constantly persecuted by the Lutheran Church, the state church of Norway. Although the Quaker movement never became widespread in Norway it did establish a stronghold in the Stavanger district from which this first emigration took place. This religious intolerance combined with the prospects for economic improvement in the United States were the driving forces behind this early migration.

In October 1825 the tiny sloop reached the United States. From New York City these settlers went to the western sector of New York State where the first Norwegian settlement in the United States was started.

Although the next mass immigration did not take place until 1836, by 1834 the New York colony had broken up and many of these pioneers moved West to the Fox River region of Illinois where the first Norwegian settlement in the Mississippi Valley had its beginning. It was this settlement that gave great impetus to the westward migration of the Norwegians.

In 1836 the next large group of Norwegians left Stavanger and on reaching the United States proceeded straight to Illinois where some established themselves in Chicago, others joining those in the Fox River region. In 1837 another group left Bergen eventually also to settle in Illinois. Glowing reports written by these early pioneers to friends and relatives back in Norway served to stimulate a movement to the United States which continued for many years.

By 1838 settlers were pushing into Wisconsin which was destined to become the state most heavily populated by the Norwegians. Settlement in Iowa began in the late 1840's and by 1852 some had been made in the southern counties of Minnesota. The majority of Norwegian settlers entered the Dakotas after 1860.[2]

Leprosy in Minnesota

The majority of reported lepers in the Upper Mississippi Valley were Scandinavian immigrants to Minnesota. Most of the early work on leprosy was done by Minnesota physicians vitally interested in the public health of that state.

[2] The information on the Norwegian immigation to America was taken mostly from Blegen, T. C., *Norwegian Migration to America 1825-1860*, pp. 24-362. Northfield, Minn.: Norwegian-American Historical Association, 1931.

As early as 1864 the condition of leprosy (SPEDALSKED) among the immigrants to the Northwest was of extreme interest to the medical men of their native lands. In that year Dr. Jeans Andreas Holmboe,[3] surgeon in charge of the Hospital for Lepers in Bergen, Norway, visited this country to study what influence, if any, a change of climate and better living conditions had on the development of the disease. Of the 12 cases which he found, two had developed the disease in this country while the other 10 had had leprosy when they left Norway. Among the 10 who brought the disease with them was a patient whom Holmboe had known in Norway, one Johannes Simonson, who at this time was completely free of symptoms. From his study Holmboe concluded that these lepers were in much better condition than they would have been had they remained in Norway. Holmboe's work represents the first exact evidence of leprosy in the Upper Mississippi Valley.

In 1869 another distinguished Norwegian scientist, Professor William Boeck of Christiania, Norway, visited the settlements in Iowa, Wisconsin, and Minnesota. Boeck,[4] one of the greatest authorities on leprosy during those years, found 18 cases in the three states. All of these victims had emigrated from those areas along the western Norwegian seacoast where the disease was endemic. Of these 18 cases, nine had the anesthetic form, three the tubercular, and six were afflicted with the mixed type. Nine of the immigrants had the disease on their arrival in America. Five of these came from leprous families while the other four were unaware of any family history of the disease.

In the other cases leprosy appeared from 2½ to 14 years after their arrival. Eight of these lepers came from families where the disease was known to exist.

All of these cases were ascribed to heredity, Boeck being of the conviction that the disease was not contagious. Like Holmboe he also believed that the health of these people was superior to what it would have been in Norway. In summing up his reasons for this belief he wrote:

> They have come away from the places where we see leprosy may originate spontaneously, and which certainly will favor its development, when the disposition is there by heredity. They have settled on fertile lands, where they certainly have to work hard to make a living, but they, generally, never undergo hardships, as we, in Norway, understand the term. Here is no work that can be compared with that done at the midwinter's fisheries in open sea off the Finmark coast, or the

[3] Holmboe, J. A., in *Norsk Magasin for Laegevidenskaben.* Series 2, Volume 19, pp. 153 ff. 1865.

[4] Boeck, Wm., in *Nordiskt Medicinskt Arkiv.* Volume 3. Number 1, pp. 1-29. 1871.

hardships suffered while tending the cattle on the high mountains plateaus, which causes so often bring out the latent leprosy.

The early work of Boeck and Holmboe was continued by Dr. Chr. Grönvold of Goodhue County, Minnesota. Dr. Grönvold, an immigrant himself having been educated at the University of Christiania, was an early pioneer in the preventive aspects of public health in Minnesota. To him must be given the credit for contributing more to the study and understanding of leprosy in the Northwest than to any other single person.

In 1873 Grönvold wrote the following: [5]

America is the place for making observations. Here the SPEDALSKE live in a country where the disease has been unknown and under conditions entirely different from their old home. Ma y of the questions already mentioned may here be answered. That many of the cases became worse can be accounted for by privation and hardships which all poor immigrants have to undergo, and by the process of acclimatization. Anything definite to the propagation of the disease can't be ascertained for many years because it may remain for a long time latent; and this is also the reason why it is impossible to hinder SPEDALSKE from immigrating as strong, healthy individuals to all appearances yet bringing the germ of the disease with them.

In 1878, in an article written in the report of the Minnesota State Board of Health,[6] Grönvold presents his ideas on the effects of immigration on these early Norwegian settlers. He points out that, while most Norwegians in the old country were fishermen and sailors, the majority of the immigrants were engaged in farming. The differences in climate are far more striking than one would realize. In Bergen (latitude–60°), for instance, the year-round temperature had little variance from a January average of 34° F. to a July average of 57° F. On the other hand St. Paul (latitude–45°) with a January average of 2° F. and a July average of 73° F. presented an inland clime of hot summers, cold winters, and sudden changes of temperature with great extremes.

Comparing the diets of Norway and New Scandinavia Grönvold showed that while the old country diet was chiefly farinaceous with a high consumption of salt fish, the American settlers consumed large quantities of pork, wheat bread, coffee, and sweet cakes. This diet change is confirmed by Blegen [7] in his accounts of conditions among the early pioneers.

[5] Grönvold, Chr., in *First Annual Report of the State Board of Health of Minnesota*, pp. 70-74. January 1873.

[6] Grönvold, Chr., in *Sixth Annual Report of the State Board of Health of Minnesota*. Appendix, pp. 18-42. January 1878.

[7] Blegen, T. C., *Norwegian Migration to America*. The American Transition, pp. 188-204. Northfield, Minn.: Norwegian-American Historical Association, 1940.

Due to these climatic and dietary changes many of the settlers developed a protracted diarrhea which lasted for many months. The Norwegian-American developed more rapidly, was taller, slimmer, and had more delicate features than his relatives in Norway and was apt to be more of a hypochondriac. Although immigration did not seem to have much bearing on the progression of leprosy, Minnesota certainly did not have any curative effect either. As yet no known spedalske had children or grandchildren in which the disease was observed.

In 1882 seven cases were known to exist in Minnesota, ten having died of the disease since the settlement in the state. In none living or dead had it been possible to trace the disease to infection in this country. One of the 18 cases originally described by Boeck had 15 grandchildren and two great grandchildren all free from the disease. Grönvold concluded that the disease was not so easily acquired in the Northwest "be it by heredity or contagion."

By 1886 only four lepers were known to exist in Minnesota, eleven having died since 1876. The average duration of life of those stricken with the anesthetic form had been 17½ years, in tubercular cases, 9 years. In this report [8] Grönvold speaks of the possibility of an "inherited predisposition" to the disease. He writes:

> . . . As the disease in Minnesota, so far as the short experience goes, does not seem to be easily communicated, it will be interesting to give attention to the constitutional peculiarities, if any, which the inherited predisposition may possibly develop in the offspring of lepers, in case that it does not give rise to leprosy itself. Some cases in this direction have been noted. One, a girl seventeen years old, every fall had fever and chills, headache, neuralgic pains in different parts of the body, especially on the ulnar side of the arms and peroneal side of the legs, eczema for a week or two on different parts of the body (last time especially in the groins and on the knees), dyspepsia and bad breath. These symptoms may be prodromes, to be followed by leprosy, but so far there has been no lasting change in the condition of her health.
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> This case seems to resemble the cases which Dr. Arning calls 'abortive leprosy,' where only some symptoms of the disease are developed.

The possibility of heredity in the transmission of leprosy received a rude jolt from the work of Hansen. Thus in 1887 Dr. Charles N. Hewitt,[9] then Secretary of the State Board of Health, received a letter

[8] Grönvold, Chr., in *Public Health in Minnesota.* Volume 2, Number 10, p. 45. December 1886.

[9] Dr. Charles Nathaniel Hewitt was born in Vergennes, Vermont in 1836. He studied at Albany Medical College in New York from which he graduated with his M. D. in 1857. Following graduation he began practice in Geneva, New York, where he remained until

from Hansen,[10] for whom the disease is now named. For its historical interest the entire text is presented here.

Dr. Charles N. Hewitt

Leprosy is in Norway, as you well know, a very common disease, though in later years diminishing considerably. Our statistics show for the year 1856, more than 2800 lepers, and at the end of 1885, only about 1100.

From a practical point of view, as well as from a scientific one, it is of the greatest interest to know if the disease be a hereditary one or not.

From the year 1868, I have constantly and assiduously studied the disease, being appointed in the special medical service for leprosy in my country. From my studies of the disease I have got the conviction that leprosy is a germ disease communicable by contamination or contagion, and not hereditary. When I say contagion, I do not mean to say that the disease is contagious in the same way as measles or scarlatina, or contagious by distance, but only by very intimate contact, probably by inoculation, though I cannot say anything positively on this point. But after our experience in Norway there is no danger in living in the same house with a leper, if one does not lay in the same bed with him, or does not use the same spoon, knife or fork as the leper. So the danger of contagion is not very great, and it is, in my opinion, only the peculiar mode of intercourse between the peasants of Norway which makes the disease prevail amongst them.

As the disease has reigned in Norway for centuries, it is absolutely impossible to exclude the possibility of inheritance in any case, and in consequence hereof the question of contagion or heredity is still sub judice, and therefore I have come over to America in the hopes that the question could be settled here.

Not less than fifty-two leprous Norwegians have to my knowledge emigrated to America, partly in the hopes that the disease should be cured here, and most of them, if not all, have probably settled in this part of the country. Further, hundreds of thousands of the Norwegian immigrants must be the offspring of lepers, or have leperous kindred in Norway. If all these had remained at home, there can be no doubt that many of them would have become leprous, and if it could now be positively ascertained, that none of them have caught the disease here in America, this would, in my opinion, clearly show that the disease is not hereditary in America, and if that be the case, the disease will not be hereditary anywhere else.

1861 when he entered the United States Army. For his outstanding service in the Civil War he received the brevet rank of Lieutenant Colonel.

Following the war Hewitt established a practice in Red Wing, Minnesota. Through his interest and advice the young State of Minnesota became, in 1872, the third state in the Union to have a department of public health. From its organization in 1872 until 1897 Hewitt served as the executive secretary during which time he made public health the important work of his life to the neglect of his private practice.

In 1874 Hewitt was appointed non-resident Professor of Public Health in the University of Minnesota, a position which he held for 28 years giving a yearly course of lectures in public health. In 1888 he served as president of the American Public Health Association.

Following expiration of his term of service in 1897 he resumed private practice in Red Wing for several years. He died in 1910 in Summit, New Jersey.

[10] *Public Health in Minnesota.* Volume 3, Number 12, p. 100. March 1887.

In the hopes that you will fully acknowledge the interest of the question, I take the liberty to ask you to assist me in finding out the dwelling places of the immigrated leperous, and if possible, also of Norwegian immigrants who descend from lepers in Norway.

You will do me, and I hope science too, a great service in assisting me in my researches.

Yours truly, G. Armauer Hansen, M. D.

These requests by Hansen were subsequently given unstinted attention by Hoegh, Grönvold, Hewitt, and Boeckman. Reading a very important paper on the subject of leprosy at the Minnesota Sanitary Conference at Rochester in May 1888, Hansen denied the heredity of the disease and expressed the belief that under reasonably sanitary conditions there was little cause for concern of its spreading in the Northwest. His findings and views regarding heredity and leprosy are well summarized in an 1888 edition of *Virchow's Archiv.*[11] Under the title of "The Heredity of Lepra" he states:

I regard lepra as a specific disease caused by the Bacillus leprae and urge that a specific, in this case a parasitic, disease could not be hereditary as the transfer of the bacillus to a person must be classified as infectious, not hereditary. . . .

By the liberality of my friend Dr. Boeckman of St. Paul, Minnesota I was, in 1888, enabled to visit North America to study the question there. Through the kindness of my colleagues Dr. Hoegh of Minneapolis and Dr. Grönvold in Goodhue County, Minnesota, who during their long residence in America had their attention directed toward lepra, I found that 160 lepers have come into the states of Wisconsin, Minnesota, and Dakota. Many of these lepers have been married and several have left numerous descendants. Besides these there are many Norwegian immigrants who have descended from lepers or have near or remote leprous relatives in Norway. It is evident that there is plenty of material for the heredity of lepra. Heredity is something so tenacious that it could be hardly destroyed by moving over from Europe to America, at least no observations made would point that way. To prove the heredity of lepra it would be necessary to find someone in America who has become leprous without any exposure to contagion but who descends from a leprous family. . . .

Of about 160 lepers who have immigrated into the three states named thirteen are alive whom I've seen and perhaps three or four more, all the others are dead. Of all the descendants of lepers that I've seen and that has included the great grandchildren of some of them, not a single one has become leprous. This is in short the result of my observation and there is in my opinion only one explanation for it, that leprosy cannot be hereditary. Someone might also conclude that the disease is not contagious since it is not spread at all but such reasoning would hardly be correct. We do not yet know in what way lepra is transmitted. It's

[11] Hansen, G. A., Die Erblichkeit der Lepra, *Virchow's Archiv.* Volume 114, p. 560 ff. 1888.

probable that an inoculation is necessary. I have in my discourse at the Copenhagen Congress pointed out how favorable the circumstances of Norwegian country populace were for transmission. How is it in this respect in North America—quite different. There is perhaps much to remark in regard to the civilization in America but in one respect the country is highly civilized insofar as the people keep themselves clean. The first thing the, by no means scrupulously clean, Norwegian peasants learn is, to keep themselves clean. Besides the houses are larger and more spacious so that all lepers I have seen have their own bed in their own room. This connection with cleanliness is certainly a sufficient isolation to prevent any transmission of lepra. In that lepra is not hereditary, it is easy to understand that the disease will not thrive in America. It cannot be seen that the climate is unfavorable to the disease. In the patients I saw over there lepra flourished as well as here in Norway. . . .

The beginning of lepra cannot be, for some time recognized. . . . As Professor William Boeck met with patients in America where the disease was first recognized fourteen years after their arrival so I have seen several similar cases. This proves that it will be impossible to prevent immigration of lepers. Neither the patient himself nor a well posted physician can make the diagnosis much less a physician who does not know the disease. I have seen two cases of syphilis in America that were diagnosed as lepra by American physicians.

Grönvold's report [12] to the Board of Health in 1889 showed there were seven cases known to authorities in Minnesota. Of the seven, five were of the anesthetic type, two were tubercular in nature. As of that time no known transmission of the disease in this part of the country was known nor was there any evidence of leprosy in American-born descendants of Norwegian lepers.

During these years due to the courageous work of Grönvold, Hewitt, and others the problem never reached proportions which would require segregation of the lepers. Nevertheless it remained for rabble rousers to demand such measures as segregation, expulsion, and exclusion. In answer to these people Hewitt delivered a stinging reply in 1889 [13]. In this report he states:

. . . The heroic self sacrifice and death of Father Damien, one of the number of men and women of varying creeds who have devoted themselves to the care of lepers, has awakened new interest in the disease, and enabled a number of physicians whose acquaintance has been limited to a case or two, or a visit to a leper colony, to trot out their " experience " of the disease and their very positive opinions as to the danger of its becoming epidemic. Some are insisting that the disease be kept out by legislation which would exclude about all Norwegian immigrants as it

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[12] Grönvold, Chr., in *Public Health in Minnesota.* Volume 5, Number 8, p. 83. October 1889.

[13] Hewitt, C. A., in *Public Health in Minnesota.* Volume 5, Number 5, p. 42. July 1889.

is often latent for years in its victims. The Minnesota experience is worth considering in that connection.

Further evidence of attempts to arouse the people and create a leprosy scare in Minnesota is to be found in a letter [14] from Grönvold to Dr. Franklin Staples, President of the Minnesota State Board of Health in 1890. An excerpt from this letter reads:

> In Duluth, recently, a Miss Flavin (I think this is the name) has been lecturing on leprosy. I understand that she has a medical education and intends to go to the Sandwich Islands to take the place of the late Father Damien. She tells the Duluthians that there are 160 lepers in the three Northwest states of Wisconsin, Minnesota, and Dakota and that lepers are everywhere in Scandinavian settlements and that Minnesota must, as soon as possible, establish an isolation hospital for them. I have been informed of the above statements . . . and I communicate them to you fearing that this young lady may succeed in creating another leper scare in our state. . . . Miss Flavin's remarks revealed the fact that she had only read the first part of Dr. G. Armauer Hansen's report in which he states that about 160 lepers had since immigration began, come into the three states mentioned above. If she had read further she would have learned "that of 160 lepers who had come to these states only thirteen which I have myself seen, and perhaps three or four more are now alive."

As a result of careful inquiry, by 1890 sixteen cases of leprosy were known to exist in the state. The increase is explained by Grönvold [15] by the fact that some cases were overlooked in earlier investigations because the disease appeared in such a mild form and the affected enjoyed comparatively good health. Many of their pains and discomforts had previously been ascribed to rheumatism. Other cases had only lately become conspicuous. Ten of the cases were anesthetic, two of which had been afflicted for over thirty years, while the remaining six were tubercular. An accurate picture of the convictions of these early Minnesota physicians is given by this quotation from Grönvold's report.[15]

> As long as immigration goes on there will be found occasionally new cases while the old ones die out. After the experience of the past 40 years there is little danger of the disease spreading. We have had lepers among us for the past 50 years and not one case of even probable contagion has been discovered. The disease is dying out here. As to keeping out disease in early stages by quarantine, it is, as Dr. Hansen of Bergen, Norway, says, impossible as not even an expert could at that time make the diagnosis. . . . New houses, new furniture and other new

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[14] Grönvold, Chr., in *Public Health in Minnesota.* Volume 6, Number 1, p. 5. March 1890.

[15] Grönvold, Chr., in *Thirteenth Report of the State Board of Health of Minnesota,* p. 19. 1889-1890.

things together with greater cleanliness, the result of economical prosperity in this country, seem inimical to, and a safeguard against the transmission of this disease by contagion.

Because of these facts, the policy of the Board of Health was to keep all cases under observation and to insist upon no other isolation than that the infected occupy their own rooms and beds and use their own utensils. Regarding seclusion of lepers in a leprosarium, the authorities believed that there was neither need nor justification for such arrangements.

The span between 1890 and 1900 produced the greatest increase in cases of leprosy in Minnesota. Several factors contributed to this increase. Better canvassing of the state for suspects along with earlier diagnosis undoubtedly was of great importance. Furthermore the number of immigrants coming to America was increasing and hence the number of lepers was bound to increase concomitantly. Between 1890 and 1898, 34 new cases were added to the growing list of lepers who had resided in Minnesota. Of these 34, 18 were first reported on in 1891, two in 1892, three in 1893, two in 1894, two in 1897, and seven in 1898. Of these 34, 29 were Norwegians, and 5 were from Sweden.

These 34 cases brought the total number of known cases that either had resided or were residing in Minnesota to 51. Several interesting facts were emphasized when Dr. H. M. Bracken,[16] Secretary of the State Board of Health, tabulated these cases. In his report [17] he enumerates his findings and expresses his views as follows:

1. The impression that leprous immigrants from the Scandinavian Peninsula are all from Norway is a wrong one. Five of 11 lepers placed on file by our Board during 1897 and 1898 are from Sweden.

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[16] Dr. Henry M. Bracken was born in Jersey, Ohio in 1854. His medical education was obtained from the University of Michigan and the College of Physicians and Surgeons, from which latter school he graduated in 1877. Following his graduation he practiced in Edinburgh, Central and South America, New England, and Mexico respectively until 1885 when he settled in Minnesota.

Upon organization of the Medical School of the University of Minnesota in 1887 he was appointed Professor of Materia Medica and Therapeutics and he lectured also on Public Health and Preventive Medicine. He was elected to the State Board of Health in 1895 and became its Secretary and Executive Officer in 1897. In 1907 he resigned his faculty position to devote full time to the Board of Health. During his incumbency which lasted until 1919 he was particularly concerned with the care of lepers in Minnesota and was instrumental in the establishment of a national leprosarium.

Following his retirement as State Health Officer he worked with the Veterans Bureau until 1923 when he moved to California where he died in 1938.

[17] Bracken, H. M., in *Public Health*. American Public Health Association. Volume 24, pp. 186-191. 1898.

2. The feeling that we can quarantine against lepers by watching immigrants is a unsafe one. The family history of all immigrants from a country where leprosy prevails should be secured before they are allowed to embark for America, and no member of a leprous family should be permitted to land upon our shores.

3. It would appear that the conditions antagonistic to the spread of leprosy in Minnesota are also opposed to sterility, as borne out by the families of several of our lepers. (Some of these have children, as shown by the following figures: 5, 5, 6, 6, 4, 6, 4, 5, 8.)

4. It is quite possible for leprosy to die out in certain favored sections of the countries, such as Minnesota, without segregation, *provided* the importation of lepers be discontinued.

5. Even in Minnesota, one has but to visit some of these lepers to feel that segregation *should* be insisted upon in all cases. One cannot but feel, on entering a filthy home and seeing a leprous mother careless in her habits, that the children are not safe.

6. Segregation in single States is not practical. It would tend simply to drive lepers from States enforcing such practice to those that were not carrying out the system.

7. A Federal home should be provided for these unfortunates. They could thus be cared for more economically and more satisfactorily than through any State provision.

8. In spite of all precautions that we may take, there will be some leprous individuals in this part of the world for many years to come.

9. The Scandinavian Peninsula does not furnish all leprous individuals found in the United States.

Dr. Bracken's claim for a federal leprosarium was realized 23 years later in Carville. That leprous individuals in the U. S. did not necessarily come from Scandinavia has been substantiated in the first chapter.

In 1899 an article written by Dr. Hansen appeared in an issue of the *St. Paul Medical Journal*.[18] This article was in the form of an answer to the charges by a prominent American leprologist—Dr. Albert Ashmead—that Norway was ridding herself of lepers by exporting them to the United States. Highly insulted by this slanderous accusation of his country, Hansen presents the reason for the decline of the disease in Norway. The figures used in his paper are most interesting.

From 1856 to 1895 some 5000 odd new cases of leprosy were reported in Norway. Of these 5000, approximately 3400 were segregated in leprosaria. Only 287 were known to have emigrated and of these only 170 to North America. Furthermore, of these 170 only about 20 emigrants were known to be lepers before they left Norway. By 1895 only 688 lepers were known to exist in Norway.

In view of these figures Hansen states:

[18] Hansen, G. A., in *St. Paul Medical Journal*, pp. 243-247. April 1899.

There remains but one possible explanation of the decrease of leprosy in Norway and that is, that the segregation of so many lepers has prevented them from infecting their fellow beings; and the results show most conclusively, that the most rational method to prevent the spread of leprosy is to isolate as many as possible of the sick and thereby prevent them from infecting others.

By 1899 Minnesota had 16 known lepers and according to Bracken [19] estimates by competent physicians were to the effect that it was possible that as many as 50 Scandinavian lepers existed in the state. This figure included those cases which were considered cured.

In 1900 Bracken compiled all cases of leprosy officially reported from Minnesota, Iowa, Wisconsin and the Dakotas.[20] This series included 75 cases, all of Scandinavian origin, 64 of which were Norwegian, the remaining 11, Swedish. Sixty-one of the cases were reported from Minnesota, the remaining from the rest of the states. Of those cases in which the type of leprosy was known, the tubercular existed in 34, the anesthetic in 20, and the mixed type in 8 cases.

In regard to the high incidence of leprosy in Minnesota as compared with the above neighboring states, Bracken has this to say:

It might appear from the report of cases in the Northwest that leprosy was far more common in Minnesota than in the neighboring states. I can see no reason for this belief, however, for the lepers in this district are among the immigrants from Norway, Sweden, Iceland and China. These people have quite a representation in all this group of states. I can only attribute the more complete returns of Minnesota to the fact (1) that there has been less agitation against leprosy in this than in some of the neighboring states; (2) that with this lack of agitation against leprosy physicians report their cases more willingly to the state board of health, which has endeavored during the last twenty years to palliate the sufferings of this unfortunate class; (3) that Minnesota is fortunate in having among its physicians men who are familiar with leprosy, and who are interested in philanthropic work, and these physicians have given material aid to the state authorities engaged in securing a list of all lepers in Minnesota. It may be worthy of note that several lepers in the Minnesota list give the history of a previous residence in Wisconsin, but their names in not a single instance appear upon the Wisconsin records. It might seem to some that, in discussing the leprosy question, it was only necessary to consider those cases now living; but if we are to judge of future needs we must know conditions of the past as well as of the present. Of the thirty-seven living lepers known to be resident in the Northwest, permit me to state that seventeen only are in Minnesota, and there is a strong possibility of two of these being dead, but we have no positive knowledge of the fact.

It does not seem that all parts of the country are favored as are Minnesota and adjoining states, where not a single American-born leper is to be found, even among the descendants from a leprous parent.

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[19] Bracken, H. M., in *St. Paul Medical Journal*, pp. 74-76. January 1899.
[20] Bracken, H. M., *St. Paul Medical Journal*, pp. 813-837. December 1900.

Bracken's claim that no American-born leper was ever found in Minnesota was soon to be disproved. In the Biennial Report of 1901-1902 [21] is a case history of the first known American-born leper in Minnesota.

This young male of Norwegian ancestry was born in Minnesota in 1870 and died of a mixed leprous infection in 1898. Symptoms of the disease appeared first in 1885. There was no history of leprosy in the family other than an uncle who had died of the disease in Norway. The patient had never seen this uncle however. There were lepers living in the same neighborhood and it was the belief that the infection in this case may have arisen from contact with a nursemaid from one of these leprous families. On investigation, however, this woman was found to be well and hearty with no symptoms of the disease.

A brother of this patient born in Minnesota in 1879 first developed symptoms about 1889. At the time of the Biennial Report of 1901-1902 he was still living and in fairly good condition. In all probability he was infected by his brother.

Fifteen known lepers were residing in the state when this report was published.

Subsequently six more cases of leprosy in American-born residents of Minnesota were uncovered by the state health authorities. Of these six cases, three appeared in one family. This history, being one of especial interest, is herewith presented briefly.

The mother was born in Sweden in 1867. When she was eight years of age she was adopted by a leprotic woman with whom she lived for 12 years prior to the woman's death. The mother emigrated to Minnesota in 1887, was married in 1888, and developed the first symptoms of the disease in 1901 following the birth of her fourth child. A fifth child was born before her death in 1905 of the tubercular type of leprosy.

In 1906 her oldest son developed a sore on his left arm which eventually developed into a far advanced mixed type of the disease. He was cared for by his father until his death in 1913. At the time of his death his father and four siblings (two brothers and two sisters) were free of any evidence of the disease.

In 1921 the oldest daughter who had helped her father care for the deceased brother was diagnosed clinically and microscopically as a case of tubercular leprosy. At this time she had been married six years and was the mother of two small children, a boy four years of age and a girl two. Her father and siblings remained well and symptomless. Later

[21] Bracken, H. M., *Nineteenth Report of the State Board of Health of Minnesota*, p. 205 ff. 1901-1902.

that year the two-year-old granddaughter was diagnosed as a case of suspected leprosy on the evidence of the pathological structure of a lesion which conformed to the granuloma of leprosy, her clinical appearance, and the history of leprosy in the family. Both daughter and granddaughter were removed to the National Leprosarium in Carville in 1922.

The granddaughter was discharged from Carville in 1927 as an arrested case and no longer considered a menace to public health. Periodic checkups taken for many years following her discharge revealed no evidence of the disease.

The daughter was discharged as arrested in 1930 but on the recommendation of the authorities was readmitted that same year and there she has remained.

Two of the remaining three cases developed in the two American-born children of a Norwegian immigrant who died of the disease in 1905. The disease in the son first manifested itself in 1904 and he died in 1911. The daughter developed the disease in 1910 but did not die until 1928 and only then after raising ten children in the most filthy and squalid of conditions. For those who believed that mere cleanliness was the reason why leprosy did not take in the Northwest this case would provide an interesting problem as neither the husband nor any of the ten children ever developed symptoms of the disease.

The remaining case was an infection in the daughter of a leprous Norwegian immigrant. She was born in Minnesota in 1891 and her earliest symptoms developed when she was six years of age. None of her five living siblings ever became leprous. Her case was declared inactive in 1920 but she was quite mutilated at that time.

With the turn of the century the concern about leprosy became less. Fewer cases appeared with the exception of 1906 when six new cases were reported. By 1912 only 18 cases remained in Minnesota and of these 17 were in the immediate families of lepers. At this time Bracken [22] stated:

> We have no record of leprosy occurring outside of the family of a leper in Minnesota and we know of many cases where, with a leper in the family, no other cases of leprosy appear.

Between 1912 and 1921 only five new cases were reported. In 1921 three cases were reported in Scandinavian immigrants—two Norwegian men and a Swedish woman. These three represent the last of the influ-

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[22] Bracken, H. M., *Public Health Reports*. Volume 27, Number 24, p. 945. June 14, 1912.

ence of Scandinavian immigration on leprosy in Minnesota although two Finnish immigrants were reported as being lepers in 1923.

By 1936 only six Minnesota lepers were living. One resided in the state and was an apparently arrested case. The other five were in the National Leprosarium at Carville. Excluding those out-of-state lepers who have consulted the Mayo Clinic, there have been no new cases of leprosy in Minnesota since 1932.

Up to 1948 108 lepers had been officially reported in Minnesota. Of these, 10 were out-of-state residents reported by the Mayo Clinic. An analysis of the nationality of the remaining 98 is of interest:

Norwegian	53
Swedish	13
American of Swedish parents	2
American of Norwegian parents	5
American of Swedish grandparents	1
Not given (8 probably Norwegian)	10

The remaining 14 were scattered among Mexicans, Filipinos, Finns, Greeks, Chinese, Italians, and Canadians.

Of these 98 cases, 79 were males, 19 were females.

The experience of the last 50 years corrected the earlier impressions that no infection whatsoever occurred among American-born Norwegians. However the rate of infection was shown to be extremely small. The incidence of leprosy in the Midwest decreased far more rapidly than it did in Norway during the same period.

Leprosy in Wisconsin

The literature on the history of leprosy in Wisconsin is neither as extensive nor as complete as that written about the disease in Minnesota. The available records are scanty and somewhat inconclusive regarding the prevalence of the disease but their presentation is intended to indicate the concern with which the disease was met by Wisconsin authorities during the later years of the 19th century.

In September 1883 in a letter from Dr. Grönvold to Dr. Hewitt of the Minnesota Board of Health [28] the information is given that of the 18 cases reported by Boeck [4] in 1870 nine of these lepers were from Wisconsin. All cases were found in emigrants from Norway.

[28] A personal letter, a copy of which was received through the courtesy of Dr. Ralph H. Heeren of the Iowa State Board of Health. 1949.

One of the earliest references to leprosy in Wisconsin is to be found in a rather disturbing article which appeared in the Milwaukee Sentinel of July 30, 1883. The reporter apparently aroused to feverish pitch by the unfounded statements of some Milwaukee physicians, had this to say:

Loathsome in its external appearance, terrible in its effects and contagions, the Oriental disease known as leprosy is by popular fallacy generally applied to countries far remote from the United States with the exception, perhaps, of the Chinese population in California. It is a fact however vouched for by medical authority that its inception and spread in the State of Wisconsin cannot be doubted. Prominent medical men, among them a number resident in this city, have investigated what at first was considered merely a sensational rumor and have discovered and noted with concern that in the northwestern portion of the State, where the Norwegian element preponderates, the disease has gained a foothold and that its eradication will require much effort. As far as has been ascertained, the loathsome disease has confined its ravages among the Norwegian inhabitants, but its rapid spread has been viewed with much alarm. Crossing the Mississippi River it has fastened its fangs on the population in eastern Minnesota, until now Wisconsin and Minnesota in the districts indicated, constitute one of the four great head-centers in the United States from which the contagion is radiating. In the western hemisphere, Wisconsin, Louisiana, South Carolina, Mexico, Bermuda, California, and the Sandwich Islands are considered the most afflicted districts and it is prophesied by medical men that unless measures are taken soon, this State will be afflicted terribly by the encroachments of the disease.

A prominent physician of Milwaukee said yesterday:

"As has been well-known for some time, there exists among the Norwegian population of this State a large number of cases of the disease which is now the scourge of the people of the Sandwich Islands, and which was looked upon by the people of Biblical times with such dread, and merited abhorrence, leprosy. In searching the records of the State Board of Health I cannot find that any effort has as yet been made to stop its spread or limit its introduction. The disease in question is eminently contagious and is not only carried by actual contact of a healthy person with a leper, but may be acquired from hotel towels and similar sources of contagion. . . . At the present time there are four leprous centers in the United States, namely Eastern Minnesota and Northwestern Wisconsin among Norwegians, California among the Chinese, Louisiana, and among the Indians of the Northwest. That the disease is spreading among us, and that too, with comparative rapidity, cannot for a moment be doubted and it would seem that the time has come for legislation and national action to prevent its further introduction and further spread. To anyone who will take the trouble to investigate this subject the results will not only be of interest, but will be alarming, and as the matter is one which is of interest to the world at large as well as to the medical profession, I think that the attention of the public should be drawn to it. I hope that proper action may be taken through public legislation to blot out this most disgusting disease from the State, at least and perhaps eventually from the whole nation."

The disease is probably the most terrible in its visible effects known. The victim, if he allows it to proceed very far will find it incurable and may live for

years without having his general health affected. . . . The leprosy of the middle ages is identified more closely with warm climates, but lepra, the disease which is probably the one prevalent in this State, can occur in almost any climate. Although its contagious qualities have been considered problematical, it has been very satisfactorily demonstrated that it is very liable to spread with accelerated rapidity. Although the causes which lead to the development of the disease are shrouded in mystery it has been fully substantiated that it is hereditary and that men are more liable to the malady than women. . . .

Soon after this publication, the *Sanitary News* (Chicago) doubting the accuracy of these statements addressed a letter to Dr. J. T. Reeve,[24] the secretary of the Wisconsin Board of Health, requesting information on the exact status of leprosy in Wisconsin. Dr. Reeve's reply was as follows:

Editor of the Sanitary News: Your letter referring to a statement which has appeared in several papers, that leprosy in a highly contagious form exists and is spread with comparative rapidity in Wisconsin, is duly received. You ask for the exact facts in the case which are as follows:

The article referred to is wholly untrue and sensational. It appeared first in the Milwaukee Sentinel, and was published on the authority of a physician of that city; the editor himself, in a brief editorial in the same issue expressed doubt of its accuracy. The truthfulness of the statement was at once denied by myself and by others and the physician who is responsible for the story was publicly requested to furnish the State Board of Health any evidence he had of the existence of any cases of the disease in the state, that it might be fully investigated. He has not only failed to do so, but he declines, when privately solicited through the editor of the Sentinel, to allow his name to be given to the State Board of Health for personal correspondence. The inference is irresistable that the author of the story that leprosy exists in Wisconsin has no evidence which he can present to prove his assertions.

So much for the sensational statements referred to, but I may add the following facts, which, though it is known that leprosy has been brought into the Northwest States in a few instances by immigrants, and chiefly from Norway, will show, I think quite conclusively that there is no occasion for alarm therefrom and which render it doubtful if there is now even one genuine case of this disease in Wisconsin.

1. The whole number of cases that have been brought to us in this way is very small, and *none* have originated in this state so far as can be ascertained by careful inquiry. Dr. Hoegh of this Board, who has an extensive acquaintance among Norwegians, and who so long ago as 1869, instituted special inquiry circulars concerning the prevalence of leprosy among them could then learn of but 2 or 3 cases and having ever since kept up an interest in this investigation he has in these 14 years seen but 4 cases, two at least, if not all of which, are dead. Dr. Hoegh's opportunity for knowing whether leprosy exists in Wisconsin or not is

[24] Reeve, J. T., in *Eighth Report of the State Board of Health of Wisconsin.* First Biennial Report, pp. 75-77.

therefore exceptionally good, and his opinion may safely be accepted as authority, yet in a recent article to a Norwegian paper he characterizes the Sentinel informant's story as utterly groundless.

2. Since the appearance of the article in question there has been held a meeting of the district medical association which embraces that portion of the state in which leprosy is said to be prevalent and at which there was present a full representation of the medical men who, of all others, would be most likely to be well informed concerning it, yet, the subject being presented, not one of them knew of a single case in the state. Two cases had been seen, the one five years ago, the other 12 years ago but both were dead.

3. The State Board of Health of Wisconsin has official reporters in every county and in nearly every township in the state, and in addition, it has special correspondents at most of the important points, by whom it has during each of the last six years been informed concerning diseases that are prevalent in their respective localities. Many of these men are acute observers, quick to notice, and to report the prevalence, or the existence of any unusual or dangerous disease, yet from none of these men has there ever been reported any case of leprosy except those which have herein been referred to.

4. It is thus evident that if leprosy exists at all in Wisconsin the number of cases must be exceedingly small, and that in the rare cases in which it has been imported to the Northwest by immigration, its tendency has been to die with the patient; that its reputed hereditary character has been rarely if ever manifested, and in no case is there any evidence that it has been spread by contagion though there has been apparently no separation of the leprous from their families or friends. In proof of these statements there are now living in Wisconsin, in Minnesota, and in Iowa the perfectly healthy widows, children and grandchildren of those who were lepers.

Very Respectfully,

J. T. Reeve,
Sec'y, State Board of Health

Appleton, Wisconsin, August 27, 1883

Dr. Hoegh, to whom reference was made in the above letter, was Wisconsin's counterpart of Dr. Grönvold of Minnesota. His keen interest in the health conditions among the Norwegian settlers is reflected in his desire to know of the prevalence of leprosy from 1869 to 1883.

By 1886 the official picture had not changed. Boothby in an article on leprosy [25] claimed that as far as he was able to learn, only four cases were known to have existed within the borders of the state. These four cases had all appeared in Norwegian immigrants.

In the Board of Health report for that year [26] a Dr. Clough of St. Croix County presented the interesting information that it was the practice

[25] Boothby, H. M., in *Transactions of the State Medical Society of Wisconsin*, pp. 203-211. 1886.

[26] *Tenth Report of the State Board of Health of Wisconsin*, pp. 61-64. 1886.

among Norwegian physicians to advise all lepers to immigrate to the United States as it was believed that there was "something sanative in such a procedure." This report also contains a statement by Hoegh to the effect that he had been in correspondence with Norwegian authorities and from them had obtained statistics of leper immigration into the United States since 1858. The Norwegian records contained 68 names. Norwegian clergymen residing in America supplied a supplementary list and from this study Hoegh concluded that at least 150 Norwegian lepers immigrated to America between 1858 and 1886.

In 1887 Reeve [27] was able to report one new case in St. Croix County. This leper was also a Norwegian immigrant and on the recommendation of the attending physician was carefully instructed in isolation technique.

In 1888 Hoegh [28] was of the opinion that there were probably only "about half a dozen" lepers in Wisconsin and "as the disease only spreads under the poorest sanitary conditions" there was no reason to believe that the disease would acquire a permanent foothold in Wisconsin.

In 1890 Hoegh delivered an address in Nashville, Tennessee regarding the contagiousness of leprosy and its management in the Northwest.[29] Excerpts from his speech are herein presented as they give a rather clear picture of the situation as it existed at that time.

> In regard to the history of leprosy in the Northwestern States, the writer is tolerably well familiar with it. Through circulars sent to ministers, merchants, physicians, and other prominent men among the Scandinavians, nearly every case that has been known and recognized was investigated. Since the beginning of the Scandinavian emigration, probably less than two hundred lepers have come to this country—less than twenty live today—spread through the Northwestern States. Not one of the now living known lepers was born in the United States. The children and grandchildren of deceased lepers, of whom many now live amongst us, have remained free from the disease, which has never appeared in any of them. No instance is recorded or known where any native of this country has been contaminated by any of these immigrants. In view of these facts it does not seem permissible to indulge in the alarming view of those who believe if we do nothing "in fifty years there will be lepers in every hamlet, and leper houses crowded with their mutilated victims in every city." In the present state of civilization in the Northern part of the United States it seems as if the disease does not find those special conditions which it requires for its extension, and with the most ordinary

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[27] Reeve, J. T., in *Eleventh Report of the State Board of Health of Wisconsin*, p. 54. 1887.

[28] Hoegh, K., in *Twelfth Report of the State Board of Health of Wisconsin*, p. 162. 1888.

[29] Hoegh, K., in *Thirteenth Report of the State Board of Health of Wisconsin*, p. 92 ff. 1889-1890.

care it ought to be possible to stamp it out, not only in the solitary instances where it is found, in the Northwest, but also in California and the South.

With this as a background Hoegh made the following recommendations:

1. Leprosy immigrants should not be allowed to become domiciled in the United States but be sent back to their respective countries. . . . As the Norwegian government has very accurate information about its lepers, it will be an easy matter to guard against the introduction of leprosy from Norway as the Norwegian government probably will give its willing cooperation. . . .

2. The lepers that we have the misfortune to have among us should be under the control of the sanitary authorities to the extent that no leper should be allowed to sleep in the same room, far less in the same bed, with a healthy person. He should have his separate clothes, towels, bedding, dishes, and other eating utensils. . . .

The second recommendation requires no comment but regarding the first there is much room for debate. Either Hoegh did not read Boeck's classic report [4] written in 1870 or said report did not impress him. The very fact that some of the Norwegian immigrants in Boeck's series did not manifest the disease from 2½ to 14 years after arrival in America should in itself be proof that one cannot restrict the immigration of lepers. As Hansen pointed out [11] not even physicians familiar with the disease are able to detect it in its incipiency.

In 1892 Reeve sums up the picture of leprosy in Wisconsin to that time.[30]

The existence of a few isolated cases of Leprosy in this State has been referred to in several previous reports, and special investigations of the disease made since my last report, simply confirm the views heretofore held by the Board concerning it. The disease though now recognized as a contagious one is contagious only under exceptionally favoring circumstances. In this State it is not increasing; on the other hand it is steadily diminishing by the death of its unfortunate victims. No cases have ever originated in this State or appeared in the person of any one born in this country, either by contagion or otherwise though until recent years Lepers have lived in marital relations without communicating the disease to the other party in the marriage relation, or to their children. . . .

By 1894 only five known cases of leprosy were living in Wisconsin and these were confined to Dane and St. Croix Counties.[31] All were Norwegian immigrants. In this year Dr. James Nevens Hyde, Professor of Dermatology at Rush Medical College, published an article [32] on the

[30] Reeve, J. T., in *Fourteenth Report of the State Board of Health of Wisconsin*, p. 47. 1891-1892.

[31] Reeve, J. T., in *Fifteenth Report of the State Board of Health of Wisconsin*, p. 11. 1893-1894.

[32] Hyde, J. N., in *Transactions of the Congress of Physicians and Surgeons*. Volume 3, pp. 103-116. 1894.

distribution of leprosy in North America. His statistics list 20 as the number of cases recognized in Wisconsin up to 1894. Unfortunately Dr. Hyde does not explain in detail where he has obtained his information, whether it was based on actual observation, or whether he simply added former enumerations. The latter procedure would probably make for counting the same case several times.

No new cases were reported to the State Board for the period 1895-96.

In 1897 the new Secretary of the State Board of Health was Dr. U. O. B. Wingate. In July of that year Dr. Wingate was called to Wausau to investigate a suspected case of leprosy. In his report [33] he relates this experience.

> This case had been creating a great deal of excitement inasmuch as the newspapers had commenced to publish articles concerning the matter and suggested neglect on the part of the officials in not having the case thoroughly investigated. The health officer and also the county physician who had seen the case, did not believe it to be one of leprosy, but to quiet the public excitement it was deemed advisable by the officials to have the matter settled by the State Board of Health.

On careful investigation the opinions of the health officer and the county physician were confirmed. The man in question, while markedly disfigured, was suffering from lupus vulgaris.

By 1900 only three cases were known to live in Wisconsin, none of which had contracted leprosy in the state.[34] In Bracken's series [20] of 74 cases in the Northwest up to 1900, seven were from Wisconsin. Of these seven, six were Norwegian and one was Swedish. Two had been afflicted with the tuberculous type, two with the anesthetic type, while the manifestations in the other three were unknown.

During the period of 1901-1902 the Board was called upon to investigate three " new " cases of leprosy.[35] These cases were proven to be respectively discoloration of extremities due to exposure to cold, icthyosis hystrix, and " lupus of the skin." At this time only three cases in the state were known to the Board of Health.

This report marks the end of Scandinavian influence on leprosy in Wisconsin. Since that time six isolated cases of leprosy have been reported to the Board of Health none of which has appeared in persons of Scandinavian descent.

[33] Wingate, U. O. B., in *Seventeenth Report of the State of Wisconsin Board of Health*, p. 139. 1897-1898.

[34] Wingate, U. O. B., in *Eighteenth Report of the State of Wisconsin Board of Health*, p. 18. 1899-1900.

[35] Wingate, U. O. B., in *Nineteenth Report of the State of Wisconsin Board of Health*, p. 54. 1901-1902.

Leprosy in Iowa, the Dakotas, and Illinois

Holmboe,[3] during his tour of the North Central States in 1863 encountered three cases in Iowa, all of whom were Norwegian immigrants residing in Winneshiek County.

In 1870 three additional cases were reported in Boeck's series.[4] These three like those reported by Holmboe were also Norwegian immigrants living in Winneshiek County.

In 1877 the seventh case was reported by an Iowa minister, Reverend C. Koren. This leper, a Norwegian immigrant, had been in the clergyman's congregation and had succumbed from the effects of the anesthetic form of the disease in 1877.

In 1883 the eighth case was discovered which was subsequently reported to Dr. L. F. Andrews of the Iowa State Board of Health.[36] This leper, a native of Bergen, Norway first manifested symptoms of the disease in 1873, seven years after his immigration to America.

Dr. Andrews [36] in his report of 1885 has this to say regarding Iowa leprosy:

> Thus we have had eight cases of leprosy in Iowa in the past twenty years, all now dead, the last dying in August 1883.

No new cases came to the attention of health authorities until 1898. In Dr. Hyde's report of 1894 his compilations reveal that as of that year twenty cases of leprosy had been known in Iowa.[32] In the 1899 Biennial Report [37] there were three cases known in Iowa, all of which had come to the attention of public health officials within the past year. All three cases were found in Norwegian immigrants. The first, a 19-year-old girl, born of a leprous mother in Bergen was found to be suffering from an advanced tubercular variety of leprosy. The second was a 35-year-old male with far advanced disease, type unknown. The third was a male of unknown age who was classified as having the mutilans variety of the disease. All three had developed symptoms prior to their emigration from Norway.

Since 1900 no new cases have been recorded in Iowa although Dr. Walter Bierring,[38] the State Health Commissioner at the present time, believes that leprosy was reported in Northern Iowa in 1910 but proof of this is not available.

[36] Andrews, L. F., in *State of Iowa Board of Health.* Biennial Report, p. 30. 1885.
[37] *State of Iowa Board of Health.* Biennial Report. Chapter 4, p. 27. 1899.
[38] Personal communication from Dr. R. H. Heeren of the Iowa State Board of Health. 1949.

There is relatively little information concerning the prevalence of leprosy in the Dakotas despite fairly heavy Norwegian migration to those states. In Bracken's [20] tabulations of leprosy in the Northwest in 1900 there are two authentic cases from North Dakota. The initial case, a Norwegian immigrant, came to America in 1882 and his disease was first diagnosed in 1893. He and his family were completely ostracized although his wife and six children remained absolutely free of the disease.

The second case was of the tubercular type found in a Swedish immigrant who first manifested symptoms of the disease in 1897 seven years after immigration from his native country. At the time of the report he was a county charge. Through the courtesy of the North Dakota State Department of Health [39] records were made available which listed seven leprosy cases known to have existed in that state. The two mentioned above are included in this list. Of the remaining five two are known to have been Norwegian immigrants. The nationality of two others is not known although they are believed to have been Norwegian while the remaining leper was a Canadian who, when discovered, was immediately sent back to Canada.

Bracken's report has but one case from South Dakota. This man, a Norwegian immigrant, developed signs of the disease in 1895 six years after his arrival from Norway. He suffered from the tubercular variety of the disease. No cases have been reported since 1903 when records were started by the South Dakota Board of Health.

Little has been written regarding leprosy and the Norwegian immigrant in Illinois. This is rather disappointing in view of the fact that many of the early Norwegian settlements in the United States were in Illinois and it may be safely assumed that some leprosy did exist among the early settlers. In Holmboe's report [8] two of the 18 lepers in his series lived in Illinois. The report of Dr. Hyde [32] in 1894 estimates a total of 18 cases of leprosy in Illinois. How many of these were Scandinavians is not known. Bracken's report [20] of 1900 includes no statistics on Illinois. As of that time, however, Dr. J. A. Egan of the Illinois Board of Health reported that there was no record of leprosy within his jurisdiction. Since the advent of the official recording of leprosy in Illinois in 1917 only one leper of Scandinavian ancestry is known. This Swedish immigrant was first reported in 1921, 22 years after his arrival in the United States. He was suffering from the nodular variety of the disease.[40]

[39] Personal communication from Dr. Kenneth Mosser of the North Dakota State Department of Health. 1949.

[40] Personal communication from Dr. Jerome Sievers of the Illinois Department of Public Health. 1949.

Discussion

The reasons for leprosy's failure to spread throughout the Upper Mississippi Valley following the introduction by Scandinavian settlers are, to this day, not clear. This is mainly due to the fact that we still do not know the exact nature of the complex transmission mechanism of leprosy, a problem that can be solved only by experimental methods. It seems, however, worth while to discuss briefly the older theories concerning the spread of leprosy in connection with the historical data gained from the Upper Mississippi Valley.

Isolation has always been considered one of the most important factors in the decline of leprosy in Europe and elsewhere. Without denying the value of isolation we would nevertheless like to draw attention to the fact that in Minnesota, for instance, isolation in the strictest sense was never practiced except in a few scattered cases. Normal family relations were maintained in the light of one leprous parent with apparently no significant effect on the health of the children. In no account is there a record of one marriage partner transmitting the disease to the other.

Differences in climate were for a long time regarded as important direct factors accounting for the prevalence or absence of leprosy in certain regions. "Cold and damp" coastal climates were supposed to be conducive to leprosy but this theory was weakened with the description of leprosy in hot dry areas. Although earlier ideas concerning the influence of climate on leprosy and other disease were undoubtedly naive and faulty, an *indirect* role of climate cannot be completely ruled out. Many authors have suggested a vector as a transmitting agent. Assuming a vector does exist it seems not impossible that a climate such as Minnesota's with its severe winters and hot summers could be in some way unfavorable to such a vector. Weather might possibly modify a synergistic action between Hansen's bacillus and some other organism not yet associated with leprosy.

At the time of the appearance of leprosy in the Upper Mississippi Valley, heredity was the dominant theory regarding transmission. This theory was held even among those who were otherwise contagionists but was eliminated by the discovery of Hansen's bacillus and on the basis of the very material collected by us which has been presented above. Hansen's studies [11] in America demonstrated clearly that if there existed a strong genetic element in leprosy transmission the disease would have been much more prevalent among the descendants of lepers in America than the eight known cases subsequently reported would indicate.

One-sided diet, especially excessive fish consumption, has for a long time been considered an important factor in the endemicity of leprosy. As yet no convincing data have ever borne out this hypothesis. Leprosy is prevalent in regions where there is no fish consumption whatsoever. The *diet changes* of the Norwegian settler so concisely outlined by Grönvold [6] cannot explain why leprosy did not thrive in this part of the United States. Despite the increased meat consumption and the diminished fish intake in the settler's diet, there was no single item completely present or absent in this revised diet.

Hansen and Grönvold among other authorities of that time believed strongly that the *improved hygiene* of the Norwegian settler was paramount in the defeat of leprosy in this territory. One cannot deny the salubrious effects of cleanliness but in Blegen's account [41] of early Norwegian health conditions he states:

> Pioneering with its problems of adjustment in both social and economic respects, was an ordeal even for those immigrants who retained their health and strength. . . . The water supply of the settlers was often uncertain, sometimes polluted. Houses were often terribly crowded (and, we might add, of the log cabin and sod house type, hardly superior to Norwegian dwellings, W. L. W.). New immigrants, recently disembarked from festering emigrant packets, poured into communities, frequently poverty stricken and germ laden. Sewage facilities were completely primitive. . . . Not even outhouse toilets were in use in early days on the frontier, windows were not screened; few of the pioneers dug wells, and those who did, ordinarily made very shallow ones; water was taken from streams, springs, or lakes, stored in barrels and often contaminated.

Certainly the early Norwegian had plenty of opportunity to develop leprosy if cleanliness were as important as many were led to believe. To cite an example where such a theory is weak one need only to recall the case discussed earlier in this paper in which an infected mother of ten raised her children in the filthiest of conditions with no evidence of leprosy ever developing in any of the family. Before leaving this theory it is interesting to note that hygienic conditions in Europe were far worse during the years when the incidence of leprosy was falling than they were during those centuries when the disease was the scourge of the continent.

There apparently were no appreciable differences in the customs of familiarity practiced by the Norwegian settler as compared with those carried on in the old country. Blegen [42] is under the impression that there was probably less bundling in this country than in Norway. The rela-

[41] Blegen, T. C., *Norwegian Migration to America.* The American Transition, pp. 54-60. Northfield, Minn.: Norwegian-American Historical Association, 1940.

[42] Blegen, T. C., Personal communication. January 1949.

tive absence of this custom would seem to be of little if any importance in that even leprous spouses did not infect their mates.

Bracken's report [21] on the first American-born leper of Norwegian descent is of particular interest in that it raises the possibility of the existence of "healthy carriers" or subclinical cases and their roles in the transmission of leprosy. In recalling the above case it should be reemphasized that this young male leper was never in contact with any leprous relative but was cared for by a nursemaid who came from a family where the disease was present. This nursemaid never manifested any signs or symptoms of the disease, however. Unfortunately she was never examined thoroughly by interested authorities. The leper in question could have very well been infected from one of two sources assuming that subclinical cases or "healthy carriers" do exist. Either one of his parents who had known and been in contact with leprous relatives in Norway or the nursemaid of the leprotic family could be guilty. It is not implausible that subclinical cases do exist as they do in many other more fully understood disease entities and that herein may lie a clue to the complexities of this transmission problem.

The mysterious spontaneous disappearance of leprosy from Western Europe during the 14th, 15th, and 16th centuries was paralleled in the Upper Mississippi Valley within the last decades of the 19th century. Thus a not unimportant episode was added to the great and challenging chapter of "Spontaneous Disappearances" in the History of Diseases. Due to the greater insight into the character of certain diseases like plague and malaria their spontaneous disappearance is much better understood than in the past. In the case of leprosy our understanding of the transmitting mechanisms of the disease is still so incomplete that even under the much better known conditions of the 19th century we were not able to single out the presence or absence of those factors which protected the young settlements of the Upper Mississippi Valley from one of the most dreadful scourges ever to beset mankind. It is our hope that progress in the knowledge of this disease will not only alleviate the fate of the suffering masses of South America, Asia, and Africa, but will also throw new light on the fascinating riddles of the past.

THE STAGESETTING FOR EPHRAIM McDOWELL, 1771-1830 *

EMMET FIELD HORINE

One hundred forty years ago a thirty-eight year old man without a degree of any kind, for the first time in the annals of medicine, successfully extirpated an ovarian tumor. Can this be regarded as youthful rashness and sheer luck? Or was it due to courage and astute thinking combined with training?

The McDowell family with which we are concerned was Scotch and came to Pennsylvania early in the eighteenth century by way of northern Ireland. Samuel, father of Ephraim McDowell, was born on October 29, 1735. Two years later his parents moved to Virginia. When Samuel was seven years of age his father, John McDowell, a surveyor, was killed by the Indians.[1]

Judging from some of the existing letters [2] of Samuel McDowell, he must have received at least the rudiments of a common school education. In his nineteenth year he was married to Mary McClung who was one day older than he. His earliest occupations were farming and surveying frequently interrupted by the necessity for fighting against the French and Indians.

The earliest mention made of Samuel McDowell in the court records of Augusta County, Virginia, is August 1752 when, in the action of Paul vs Borden,[3] it is stated that " John McDowell died intestate, leaving Samuel McDowell, his eldest son and heir, and then Magdalen [Samuel's mother] married Benjamin Borden, Jr." On August 16, 1759, Samuel McDowell qualified as a Captain of Militia in Augusta County.[4] He continued to hold his rank and fought throughout Dunmore's War (1774).[5]

* Read at the Twenty-second Annual Meeting of the American Association of the History of Medicine, Danville, Kentucky, May 24, 1949.

[1] Jos. A. Waddell: *Annals of Augusta County, Virginia, from 1726 to 1871.* 2d ed. Staunton, Va.: C. Russell Caldwell, 1902, p. 46.

[2] Otto Rothert, Editor: Samuel McDowell's Letters to Andrew Reid . . . *The Filson Club History Quarterly* [Louisville, Ky.], XVI: 172-186, July, 1942.

[3] Lyman Chalkley: *Chronicles of the Scotch-Irish Settlement in Virginia, Extracted from the Original Court Records of Augusta County, 1745-1800.* 3 vols. Rosslyn, Va. [Mary S. Lockwood, 1912], Vol. I, p. 305.

[4] *Ibid.*, Vol. I, p. 84.

[5] Reuben Gold Thwaites and Louise Phelps Kellog, Editors: *Documentary History of Dunmore's War, 1774.* Madison: Wisconsin Historical Society, 1905.

Samuel McDowell often served Augusta County, Virginia, as a commissioner and a justice which no doubt influenced his choice of a profession. He was a member of the General Assembly of Virginia, Session of February 10, 1772[6] in which capacity he continued until February 22, 1775, when he was unanimously elected with Capt. Thomas Lewis to represent Augusta County in the ensuing Colony Convention.[7] These delegates were instructed not to surrender their freedom "to any Parliament, or any body of men on earth, by whom we are not represented, and in whose decisions, therefore, we have no voice . . ." On June 2, 1775, Samuel McDowell was sworn in as an elected Burgess of the General Assembly of Virginia.[8] As a member of the Convention of 1776, he voted to instruct the Virginia delegates to the Continental Congress to vote for a declaration of independence.[9]

Samuel McDowell was sworn in as a Colonel of Militia on April 7, 1778.[10] He served with this rank during the Revolution under General Nathaniel Greene and was with him in the Battle of Guilford Courthouse[11] as well as in minor engagements.

In 1782 he was appointed one of the judges of a newly formed court of common law which was to have jurisdiction over the three counties then comprising Kentucky.[12] As will be mentioned later he assumed his duties early in 1783 and moved his family to Kentucky the following autumn.

Ephraim McDowell was born in Augusta County, Virginia, on November 11, 1771, the ninth of eleven children. Most of the biographies with which I am familiar state that he was born in Rockbridge County, Virginia, but this is palpably incorrect since this county was not established until October 1777, being formed of portions of the Counties of Augusta and Botetourt.[13] The newly formed county took in

[6] William G. and Mary Newton Stanard: *The Colonial Virginia Register* . . . Albany, N. Y.: Joel Munsell's Sons, 1902, p. 190.

[7] J. Lewis Peyton: *History of Augusta County, Virginia.* Staunton: Samuel M. York & Son, 1882, p. 173.

[8] H. R. McIlwaine, Editor: *Legislative Journal of the Council of Colonial Virginia.* Richmond, 1919, p. 1590.

[9] Stanard, *op. cit.*, p. 205.

[10] J. T. McAllister: *Virginia Militia in the Revolutionary War.* Hot Springs, Va.: McAllister Pub. Co., [1913], p. 228.

[11] Waddell: *op. cit.*, pp. 293-294.

[12] Humphrey Marshall: *The History of Kentucky* . . . Frankfort: Henry Gore, 1812, p. 182.

[13] Waddell, *op. cit.*, p. 254.

at least a portion of the land holdings of the McDowells. This has no doubt led to the confusion.

In the newly constituted county of Rockbridge there was formed a seminary which after several years was, in October 1782, incorporated by an Act of the General Assembly of Virginia [14] as Liberty Hall Academy. The Reverend William Graham was named rector and Samuel McDowell was appointed one of the trustees. There can be no reasonable doubt that Ephraim received instruction in this academy at least until his twelfth year when his father moved to Kentucky. In fact there is nothing to disprove the probability that he was left to continue his studies in this school especially since his older sister, Mrs. Andrew Reid, remained in Virginia.

Kentucky at the time of McDowell's migration was largely a wilderness. Thirty-two years earlier the first Virginians known to have explored this region came under the leadership of Thomas Walker (1715-1794), physician, assemblyman, guardian of Thomas Jefferson and surveyor.[15] Later in the same year Christopher Gist (c. 1706-1759) explored the eastern section of what is now Kentucky [16] and Daniel Boone (1735-1820) made his first trek in 1769.[17]

Enroute to their future home in the country of Kentucky, the following letter [18] was sent by Samuel McDowell from " Joseph's Grays, Washenton County [Virginia] Septr. 25th, 1783." It was addressed to his son-in-law, Andrew Reid, Rockbridge County, Va.:

Dear Andrew/

We arived here yesterday and Sets of Tomorrow we had a good Voige so far. I have nothing to write only to tell you we are well and Matty is better than she was, and I hope will soone be well. Pray let me hear from you as often as you can. Mr. Wallace and his People will be with us through the Wilderness and a great number more give myne and your Momys best Compts to Magdalene and Accept of them your Self and believe us your Loving Parents.

Sam'l. & Mary McDowell.

Harrodsburg was the site of the first permanent settlement in Kentucky

[14] William Waller Hening: *The Statutes at Large; being a Collection of all the Laws of Virginia.* Richmond, 1823, Vol. XI: 164-166.

[15] Dr. Thomas Walker: *Journal [in] First Explorations of Kentucky . . .*, Filson Club Pub. No. 13, Louisville: John P. Morton & Co., 1898, pp. 1-75.

[16] Colonel Christopher Gist: *Journal, ibid.*, pp. 101-164.

[17] John Filson: *The Discovery, Settlement and Present State of Kentucke.* Wilmington, [Del.]: James Adams, 1784, p. 8.

[18] A.l.s. owned by The Filson Club, Louisville, Ky.

having been laid out in 1774.[19] The first court of common law was opened there on March 3, 1783, with John Floyd and Samuel McDowell the Judges.[20] There being no suitable buildings in Harrodsburg the court adjourned to the meeting house near Dutch Station, six miles away. On account of such inconvenience the court authorized Walker Daniel, newly appointed Attorney General of the District of Kentucky, and John May, Clerk of the Court, to select a suitable site and construct a log courthouse.[21] The present site of Danville was laid out by Walker Daniel shortly thereafter and this settlement became the seat of justice for the District of Kentucky. Danville was established by a statute of Virginia on December 4, 1787.[22]

Most of the land of central Kentucky was extremely fertile and teemed with a fabulous amount of wild life. "Game of all kinds is also exceedingly plenty; a man may kill six or eight deer every day, which many do merely for their skins . . . Wild turkeys, very large and fat, are almost beyond number, sometimes five thousand in a flock, of which a man may kill just as many as he pleases . . ." [23] It is not surprising that Kentucky's rich soil, mild climate and paradise of game soon attracted an ever-increasing number of settlers. With a population of only a few hundred in 1775, there were, according to Filson, 30,000 inhabitants in 1784.[24] Six years later the first U. S. Census gave Kentucky a population of 73,577 and the second (1800), 220,955.

Whether Samuel McDowell brought a still with him when he came to Kentucky is not known. But on November 23, 1784, in a letter from "Pleasant Vale" to John McDowell who was still in Virginia, he ordered in addition to an assortment of nails, flooring brads, "Puter Dishes, Plates and Pint Basons," one "80 gallon Still" and "a ten gallon Cogg of Old Spirits." [25]

Five years after the arrival of the McDowells, Daniel Drake (1785-1852) was brought by his parents to Kentucky.[26] At this time there

[19] Max Charleston: *The Oldest Town in Kentucky* [Harrodsburg, Ky., 1929], p. 22.
[20] Marshall, *op. cit.*, p. 183.
[21] Marshall, *op. cit.*, pp. 183-184.
[22] Hening, *op. cit.*, Vol. XII: 601-602.
[23] J. F. D. Smyth: *A Tour of the United States of America* . . . 2 vols. London: G. Robinson, 1784, Vol. I, p. 337.
[24] Filson, *op. cit.*, p. 28.
[25] A.l.s. owned by The Presbyterian Historical Society, Philadelphia, Pa.
[26] Daniel Drake: *Pioneer Life in Kentucky*, Edited by Emmet F. Horine. New York: Henry Schuman, 1948, p. 10.

was danger of Indian raids which, in his later years, Drake described for his children:

> On the morning the first duty was to ascend a ladder which always stood, leaning behind the door, to the loft and look through the cracks for Indians lest they might have planted themselves near the door, to rush in when the strong crossbar should be removed, and the heavy latch raised from its resting place. . . . The Indians one night attacked a body of travellers, encamped a mile from our village on the road to Washington, [Kentucky.] They were sitting quietly around the camp fire, when the Indians shot among them, and killed a man whose remains I remember to have seen brought, the next day, into the village on a rude litter.[27]

How did those pioneer Kentuckians live? Their mode of life was thus described by one of their number:

> The women did the offices of the household, milked the cows, cooked the mess—prepared the flax, spun, wove, and made the garments, of linen, or linsey. The men hunted, brought in the meat, planted, ploughed, and gathered the corn; grinding it into meal on the hand-mill, or pounding the homany in a mortor, was occasionally the joint labor of both. Much use was made of the deerskins in dress—while the bear-skin, was consigned to the floor, for a bed. . . Wooden vessels, either *turned*, or *coopered*, were in common use. Every hunter carried his knife, and not infrequently the rest of the family had one, or two, in common. A like workmanship composed the table, and the stool; a slab, hewed with the axe, and sticks of the like manufacture set in for legs, supported both. . . . The richest milk, the finest butter, and the best meat, that ever delighted man's palate, were here eaten, with a relish which health, and labor only know; and which were every where offered with the most profuse hospitality, in every cabin, where we called to stay any time. No charge was made—it would have given offence to offer payment. . . .[28]

In such an environment Ephraim's boyhood was no doubt similar, in many respects, to that of Daniel Drake. There was one important difference in that McDowell's father was well-to-do if not affluent, was a judge, a trustee of Transylvania University and one of the most influential men in Kentucky, while Drake's father was poor, uneducated and ineffectual. Was it the life on the frontier which produced those two notable physicians or was it merely a coincidence? When a survey discloses many other notable persons not only in medicine but also in the arts, in the ministry, in law and in politics, produced at the same time under similar environment, the possibility of mere coincidence seems slight.

It is not known with any degree of certainty when Ephraim returned to Virginia to begin the study of medicine at Staunton under Dr. Alex-

[27] *Ibid.*, pp. 24, 26.
[28] Marshall, *op. cit.*, p. 150.

ander Humphreys (d. 1802).[20] At this period, apprenticeship in medicine usually began when the candidate was between fifteen and eighteen years of age; hence Ephraim was in all probability placed under Dr. Humphreys between 1786 and 1789. He was fortunate in having had an able preceptor who insisted that his pupils learn anatomy by dissection. This is proven by a court action resulting from the discovery of human bones in a cave which were thought to be the remains of a man who had mysteriously disappeared. Evidence was presented which indicated that the bones were those of a negro recently dissected by the pupils of Dr. Humphreys.[20]

Ephraim had as a fellow student, Samuel Brown (1769-1830) who was later to be one of the first professors in the Medical Department of Transylvania University, Lexington, Ky.[21] Dr. Humphreys had studied at Edinburgh and, no doubt, influenced both his pupils to go there. Samuel McDowell preferred that his son not go abroad and stated in a letter dated April 18, 1792, that he "would be pleased that Ephraim would finish his Education in Philadelphia . . ."[22] However, he apparently offered no strenuous objection to the trip abroad since, in a letter dated August 12, 1792, he wrote: "I have nothing to Say as to Ephraim but what I formerly Said when I wrote you, only Mr. John Brown tells me that the sooner he can go in the fall the Better as he can get there befor the Commencement of the Winter Lectures . . ."[23]

The exact date of Ephraim's arrival in Edinburgh is not known though it was during the 1792-93 session of the University. Incidentally he left Staunton, Virginia, without paying a head tax due in 1792 as is evidenced by the records which show among the delinquents, "Ephraim McDowell, to Scotland."[24] This tax was assessed in tobacco, eighteen pounds for each taxable person. Careful search by the Clerk of Augusta County, Virginia, fails to disclose that this tax was ever paid.[25]

From the records of the University of Edinburgh as quoted by Simpson,[26] Ephraim McDowell did not take a full course of lectures in

[20] Chalkley, *op. cit.*, Vol. II, p. 392.

[20] Chalkley, *op. cit.*, Vol. I, pp. 508-509.

[21] Transylvania University [Lexington], *Records of the Proceedings of the Board of Trustees (1799-1810)*, Vol. I (Second Section), p. 3, Jan. 8, 1799.

[22] A.l.s. owned by The Filson Club, Louisville, Ky.

[23] A.l.s. owned by The Filson Club, Louisville, Ky.

[24] Chalkley, *op. cit.*, Vol. II, p. 426.

[25] Personal communication, dated March 22, 1949.

[26] Alexander R. Simpson: Introductory Lecture on the Ninth International Medical Congress and American Gynecology, *The British Medical Jr.* (London), II: 977-982, Nov. 5, 1887.

1792-93 but applied himself especially to the study of chemistry. Of ten volumes he is recorded as borrowing from the library, five were on chemistry. On April 27, 1793, he took out Hamilton's "Female Complaints." The Professor of Midwifery at Edinburgh, Alexander Hamilton (1739-1802), was the author of widely used texts on obstetrics and on diseases of women and children. He wrote that successful Cesarian operations had been reported elsewhere but he believed that misrepresentation accounted for these reports because such operations had been uniformly fatal in Great Britain.[37] He quoted Dr. Monro who thought that exposure of the intestines to cold air produced "dreadful pain and inflamation . . . which generally prove fatal." [38]

Except in a few instances it has been impossible to document Ephraim McDowell's activities while in Scotland. Quoting a nephew, Dr. William Adair McDowell (1795-1853), Samuel D. Gross (1805-1884) states that during Ephraim's second year (1793-94) at the University of Edinburgh, he took a private course under Mr. John Bell (1762-1820), the celebrated surgeon.[39] Dr. Gross transmits the further information that "Mr. Bell is said to have dwelt with peculiar force and pathos upon the organic diseases of the ovaries, speaking of their hopeless character, when left to themselves, and of the possibility, nay practicability, of removing them by operation." The possibility of extirpation of ovarian tumors had been occasionally mentioned for centuries but no one had taken such an unequivocal stand as Gross attributes to Bell. In fact, had Bell advocated ovariotomy so strongly he would himself undoubtedly have performed such an operation. It is not my purpose to discount the influence which Bell exerted upon his pupils but had he taught the practicability of oophorectomy as Gross states it would seem logical for him to have at least mentioned this in his classic book, *The Principles of Surgery.* Nowhere in the first edition, in the abridgement of it or in the 1826 edition have I been able to find any mention even of the possibility of such an operation.[40] I have not had an opportunity to consult all of

[37] Alexander Hamilton: *Outlines of the Theory and Practice of Midwifery,* Edinburgh: C. Elliot, 1784, pp. 338-339.

[38] *Ibid.,* p. 346.

[39] Samuel D. Gross: *Lives of Eminent American Physicians and Surgeons of the Nineteenth Century,* Philadelphia: Lindsay & Blakiston, 1861, p. 209.

[40] John Bell: *The Principles of Surgery,* 3 vols., Edinburgh: T. Cadell, jun., 1801; 1806; 1808. *Ibid.,* Abridged by J. Augustine Smith, 2d ed., New York: Collins & Co., 1812. *Ibid.,* New Edition with Commentaries by Charles Bell, 4 vols., London: T. Tegg, 1826.

John Bell's writings and would appreciate information concerning any mention of ovarian operations he may have made.

Bell does give an eloquent and detailed lecture on tumors which for him was a favorite theme. He fervently discusses tumors of the skin, bones, glands, eye, breast, testicle, nostril, throat, salivary and lymphatic glands. A paragraph from his general remarks is as follows:

> Tumors are the most frequent of all surgical diseases; every surgeon must find the treatment of tumors, a part of his daily practice; a tumor, in whatever part of the body it is seated, requires an intimate acquaintance with the structure of that part, and a clear recollection of all the precedents or rules which may serve either to direct the judgment, or guide the hand. The surgeon should know how to resolve a tumor, or to excite it to suppuration; how to evacuate the matter, and obliterate the sac; when to suffer the mild and harmless to grow, and how to extirpate at every risk that which is prone to ulceration or cancer. Every tumor is a subject of new and anxious consultation, and every operation of this irregular nature, demands a knowledge of blood-vessels and nerves, not easily remembered, and nowhere truly described.[41]

McDowell left Edinburgh early in 1794 without having received a diploma. The time of his departure is indicated by a letter from his brother-in-law, Andrew Reid, dated January 6, 1794.[42] This letter addressed to "Mr. Ephraim McDowell—Student—at Mr. Ferguson's, Charle's Street, Edinburgh" indicates that the writer fears it may not reach Ephraim unless it has a speedy passage. The letter advises him that his father authorizes him to procure "books, medicine and a good set of surgical instruments . . . [to a value of] £200." Another factor which may have brought him home in 1794 was also revealed by the letter from Reid: "Should the war with France & the Combined powers continue much longer it is to be feared America will be forced into a War too by the infernal clan of Despots—Should this be the case before you leave that Country, you may find it difficult to get home . . ."

McDowell spent some months at Staunton [43] before returning to Danville where he began the practice of medicine in 1795. He was, for the next twenty-two years, the foremost surgeon west of the Alleghenies. It was not until the establishment of the Medical Department of Transylvania University that its Professor of Surgery, Benjamin W. Dudley (1785-1870), attained ascendancy.

[41] John Bell: *The Principles of Surgery,* Abridged by J. Augustine Smith, 2d ed., New York: Collins & Co., 1812, p. 374.

[42] Copy in possession of Mrs. Marshall McDowell.

[43] Chalkley, *op. cit.*, Vol. I, p. 409.

On December 29, 1802, Ephraim McDowell was married [44] to Sarah Hart Shelby (1785-1846), second child of Ex-Governor Isaac and Susannah (Hart) Shelby. Thus were united two of the most prominent families in Kentucky. Isaac Shelby was twice elected Governor of Kentucky, serving as its first executive from 1792 to 1796 and a second term from 1812 to 1816.[45] Governor Shelby was, in 1815, mentioned as a suitable nominee for the office of Vice-President of the United States but, learning that his name had been mentioned, he promptly declined.[46]

Gross whose biographical sketch of Ephraim McDowell was based partly on information of the family states that Sarah Shelby was "a young lady of great personal beauty and excellence." Constantine Rafinesque (1783-1840) in his *Life of Travels and Researches* mentions [47] visiting Danville in order to inspect a cabinet of curiosities owned by Mrs. McDowell. She was also greatly interested in church activities being an Episcopalian. In 1825 she was Secretary of the Union Female Tract Society of Danville.[48]

A survey of all existing copies of the Danville newspapers from the first issued on September 3, 1804, through 1830 has furnished several hitherto unmentioned facts concerning McDowell. On September 23, 1805, Doctors Ephraim McDowell and Coleman Rogers (1781-1855) formed a partnership [49] for the practice of "*Medicine & Surgery* in Danville and its neighborhood. They have a well chosen assortment of *Medicines,* which they will sell on as reasonable terms as can be purchased in this state. They will attentively attend at *Stanford* on Monday and Thursday in each week." This partnership was of short duration as is shown by the card [50] of Dr. Rogers dated January 13, 1806, announcing that he has "removed his *Medicine* to the house lately occupied by Mr. James Birney, [and] will continue to practice *Medicine & Surgery* in Danville and its neighborhood."

In one of his case reports Dr. McDowell mentions his nephew, James McDowell, as a colleague, in another, Dr. William Coffer as his "partner

[44] Personal communication from Clerk of Lincoln County, Stanford, Kentucky.

[45] G. Glenn Clift: *Governors of Kentucky, 1792-1942,* Cynthiana, Ky.: The Hobson Press, [1942], pp. 1-6, 17.

[46] Issac Shelby: [Letter to] Editors of the Palladium, *Kentucky Gasette,* [Lexington], Vol. 30, Jan. 22, 1816, p. (3)-c.(2.)

[47] C. F. Rafinesque: *A Life of Travels and Researches in North America and South Europe* . . . Philadelphia: Printed for the Author by F. Turner, 1836, p. 74.

[48] *Danville Advertiser,* Vol. I, July 14, 1825.

[49] *The Informant* [Danville, Ky.], Vol. I, Dec. 10, 1805, p. (3)-c.(3.)

[50] *Ibid.,* Vol. I, January 21, 1806, p. (4)-c.(3.)

and colleague" [51] and, in still another, Dr. William A. McDowell, his nephew, as assisting him. For a while Dr. McDowell had as a partner, Dr. Alban G. Smith (c. 1788-1865) who later changed his name to Alban Goldsmith, said to have been the third successful ovariotomist in the United States. The partnership with Alban G. Smith was terminated on April 14, 1826, and a new partnership was formed by Drs. McDowell, Moore and Caldwell.[52]

Another item gleaned from the newspapers of Danville was a Fourth of July toast delivered by Dr. McDowell at the celebration in 1825: "Our country—the first example of *successful rebellion*, to despots a bitter pill; but what are fifty, what an hundred slaves when opposed to the nerve of a single arm that strikes for liberty?" [53] This reminds one of what he wrote earlier (January 8, 1815) in a letter to his brother-in-law, John Shelby:

> I am pleased with an opportunity by Mr. Bell to Inform you we are still breathing; but how long that will be the case God only knows, for I fear what with heavy taxes and forlorn prospects of Fiskcal affairs; together with the threatening aspect of dissolution of the Union in the north east I shall not be able to breath much longer, unless some providential occurrence saves this country from the horrors of Internal convultions; Our Horizon appears to thicken daily and what will be the end time alone can develope: let the Hell hounds of England get possession of Orleans and this country may feel it for years to come. But we have a Jackson there whom I Hope will defend the city until the British vessels can be taken to the Lakes from the Mississippi having the blood of their own country-men sufficiently deep for the easy transportation of their vessels; the Kentuckians ought to rise en masse to defend that Important Key to this Western Country.[54]

Ephraim McDowell was a member of the first board of trustees of Centre College, Danville, Ky., having been appointed on January 21, 1819. His father-in-law, the former governor of Kentucky, Isaac Shelby (1750-1826), was appointed a trustee at the same time. Governor Shelby's term of office expired on July 15, 1822, while Dr. McDowell continued to serve until October 16, 1829.[55] The meagreness of the early records of Centre College makes it impossible to determine how active

[51] Ephraim McDowell: Three Cases of Extirpation of Diseased Ovaria. *The Eclectic Repertory, and Analytical Review* . . . Philadelphia: Thomas Dobson and Son, Vol. VII: 242-244, April 1817.

[52] *Danville Advertiser*, Vol. I, April 20, 1826, p. (3.)

[53] *Ibid.*, Vol. I, July 14, 1825, p. (3)-c.(2.)

[54] A.l.s. in the University of Kentucky Library, Lexington.

[55] Centre College: *The Twelfth Triennial and Thirty-sixth Annual Catalogue of the Officers and Students*, Danville, Ky.: Cincinnati Gazette Print, 1860, p. 4.

either of these men was in the affairs of this institution. Although Centre was founded by the Presbyterians, Dr. McDowell was not a member of any Church until he became an Episcopalian a few years before his death on June 20, 1830.[56]

In this study nothing has been found to indicate that McDowell had any knowledge of the French language. Had he been able to read French it is barely possible that he might have seen a report made by Delaporte in 1774 before L'Académie Royale de Chirurgie of an ovarian cyst treated by incision and removal of a portion of its contents.[57] In a discussion of this report, Morand (1726-1784) praised the boldness of Delaporte and suggested that in the early stages, ovarian cysts might be extirpated. He went on to say that neither Felix Platter (1536-1614) nor Diemerbroeck (1609-1674) thought such an operation impossible.[58] On the other hand, discussing ovarian cysts in his *Pathologie chirurgicale,* Pierre Lassus (1741-1807) declared: "Cette maladie est absolument incurable." [59]

Beyond a doubt, guided by no one but possessing sufficient anatomical knowledge, having an alert mind with surgical vision and the courage of his convictions, Ephraim McDowell performed the first successful removal of an ovarian cyst in December 1809. Thus were set in motion a series of events about which Dr. Abell will tell you.

During Dr. McDowell's lifetime, Kentucky was extremely liberal. As Sonne [60] has shown, the most widely read author in early Kentucky was Thomas Paine (1737-1809). Two of the most influential newspapers, *The Kentucky Gazette* and *The Reporter,* both published in Lexington, were admirers and advocates of Paine. *The Reporter* published an article from which the following is an excerpt:

> . . . Let not the ingratitude of a republic be inscribed upon his tomb; and let not malice vindictively disturb the repose of his ashes;—For when there shall be left on the earth no remembrance of his errors, future ages will rejoice in the freedom and happiness derived from the diffusive light and irresistible energy of

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[56] August Schachner: *Ephraim McDowell* . . ., Philadelphia: J. B. Lippincott Co., 1921, p. 221.

[57] Delaporte: Hydropisie enkistée de l'Ovarie attaquée par incision, *Mémoires de L'Académie Royale de Chirurgie,* Tome sixième, Paris: P. Fr. Didot le jeune, 1774, p. 91 et seq.

[58] Morand, *ibid.,* p. 107.

[59] Pierre Lassus: *Pathologie chirurgicale,* Nouvelle édition, Paris: Méquignon l'aine . . ., 1809, Vol. I: 279-284.

[60] Niels Henry Sonne: *Liberal Kentucky, 1780-1828,* New York: Columbia University Press, 1939.

his mind as reflected and stamped upon the pages of *Common Sense, The Crisis,* and *The Rights of Man*—those everlasting evidences of his superior greatness, and imperishable monuments of his fame. . . .[61]

Further significant evidence of liberalism among Kentuckians was their sympathy with France and her Revolution. This stimulated discussion concerning the freedom of religion as of politics. With such a background of liberalism, with the necessity of subduing the ferocious Indians and at the same time hewing sustenance, preserving life itself, in the wilderness it is not surprising that men learned to fight, to think and to act independently. That Kentucky nurtured its McDowell, its Clay, its Drake, its Lincoln and a host of others and permitted their mastery of new, hazardous and challenging experiences cannot be regarded as merely fortuitous.

[61] *The Reporter* [Lexington, Ky.], Vol. II. No. 24, p. (3)-c.(1-2), July 18, 1809.

PROFESSIONAL ATTAINMENTS OF EPHRAIM McDOWELL *

IRVIN ABELL

Sir Walter Scott wrote: "It is impossible for me to conceive a work which ought to be more interesting to the present age than that which exhibits before our eyes our fathers as they lived, accompanied with such memorials of their lives and characters as enable us to compare their persons and countenances with their sentiments and actions." The American Association of the History of Medicine is meeting today in Danville, the home of Ephraim McDowell about whom much of its program today centers. In 1935 the Kentucky State Medical Association purchased the house in which Dr. McDowell lived and in which he performed his epoch-making ovariotomy, with the idea of converting it into a shrine memorializing his achievement. The restoration problem was not to remodel or reproduce but to try to recreate the medical establishment and home in such a way as to capture as much as possible of the spirit of the place as it must have been in his time, both by careful preservation of all sound materials and by honest analysis of what could be readily observed: to restore it to life and health and the magnetism it must have had in its most interesting days. It was one of the fine mansions of its day: it still retains its dignity of aspect somewhat impaired by the encroaching advance of the city and by the architectural taste of a later day. Regardless of the excellence or the character of its architecture it remains for us a glorious mansion within whose hallowed walls was staged a drama which became for us a heritage and which, during the passing years, has brought forth abundantly, rightfully taking its place with the contributions of the benefactors of mankind in doing so much for the happiness, the satisfaction and the working power of the human race. The opportunity is presented to you today to grasp some of the spirit and much of the tradition with which this home is enshrouded.

On Sunday, December 25, 1809, Dr. Ephraim McDowell performed for the first time in the history of the world an operation for the removal of an ovarian tumor. Previous to this experience, patients afflicted with this affection were doomed to suffering ending only with the release afforded by death. It is difficult for the modern surgeon to conceive of

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the courage, the vision and the insight of this pioneer and trailblazer in invading the heretofore sacred precincts of the abdomen, a domain the exploration of which in these days is compassed with such safety as to lead Dr. W. W. Keen to facetiously refer to it as "almost the surgeons playground."

With courage and abiding faith, sustained by deep religious convictions, fortified by accurate anatomical knowledge and study, Dr. McDowell undertook the operation, well aware of the bitter denunciation and professional obloquy that would follow in the event of failure. He possessed none of the means which we at present enjoy in determining that the patient not only needs an operation but also that the patient can stand an operation. The aid of the blissful insensibility of anesthesia and the safeguard of surgical cleanliness were unknown to him. The present day methods of preparing patients for operation and the principles of postoperative care were to him an unopened book. The dreaded blood-poisoning still claimed a goodly percentage of all surgical cases. Hospitals, instruments of precision, trained nursing, and modern surgical appliances were lacking. From our viewpoint of today the inherent difficulties under which his work was done make his achievement seem almost miraculous. Dr. McDowell accurately describes the reasoning which led him to undertake the operation and portrays the steps pursued in its performance. He gained familiarity with the anatomy of the parts involved from studies upon the cadaver and, knowing his ground, was able to complete the operation in twenty-five minutes. Since the patient was conscious of every move, expedition in carrying out the procedure conserved her vitality. Her recovery was uneventful and she returned to her home on the twenty-fifth day following operation. The underlying principle of the operation as described by Dr. McDowell obtains today, namely adequate exposure by means of free incision, ligation of the blood supply to the tumor and division at its point of attachment with closure of the abdomen. While no mention is made of the suture material it is safe to infer that it was silk, and since antisepsis was unknown cleanliness was maintained with soap and water, fresh towels and linen.

Dr. McDowell evidently failed to appreciate the significance and importance of his exploit, since he published no report of it until 1817, several years after its accomplishment, when his first article, under the title "Three Cases of Extirpation of Diseased Ovaria," appeared in volume 7, pp. 242-244, of the Philadelphia *Eclectic Repertory and Analytical Review*, one of the two journals published in this country at that time. The report is as follows:

In December 1809, I was called to see a Mrs. Crawford, who had for several months thought herself pregnant. She was affected with pains similar to labour pains, from which she could find no relief. So strong was the presumption of her being in the last stage of pregnancy, that two physicians, who were consulted in her case, requested my aid in delivering her. The abdomen was considerably enlarged, and had the appearance of pregnancy, though the inclination of the tumor was to one side, admitting of an easy removal to the other. Upon examination, per vaginam, I found nothing in the uterus; which induced the conclusion that it must be an enlarged ovarium. Having never seen so large a substance extracted, nor heard of an attempt, or success attending any operation, such as this required, I gave to the unhappy woman information of her dangerous situation. She appeared willing to undergo an experiment, which I promised to perform if she would come to Danville, (the town where I live) a distance of sixty miles from her place of residence. This appeared almost impracticable by any, even the most favourable conveyance, though she performed the journey in a few days on horseback. With the assistance of my nephew and colleague, James McDowell, M. D., I commenced the operation, which was concluded as follows: Having placed her on a table of the ordinary height, on her back, and removed all her dressing which might in any way impede the operation, I made an incision about three inches from the musculus rectus abdominis, on the left side, continuing the same nine inches in length, parallel with the fibres of the above named muscle, extending into the cavity of the abdomen, the parietes of which were a good deal contused, which we ascribed to the resting of the tumor on the horn of the saddle during her journey. The tumor then appeared full in view, but was so large that we could not take it away entire. We put a strong ligature around the fallopian tube near to the uterus; we then cut open the tumor, which was the ovarium and the fimbrious part of the fallopian tube very much enlarged. We took out fifteen pounds of a dirty, gelatinous looking substance. After which we cut through the fallopian tube, and extracted the sack, which weighed seven pounds and one half. As soon as the external opening was made, the intestines rushed out upon the table; and so completely was the abdomen filled by the tumor, that they could not be replaced during the operation, which was terminated in about twenty-five minutes. We then turned her upon her left side, so as to permit the blood to escape; after which, we closed the external opening with the interrupted suture, leaving out, at the lower end of the incision, the ligature which surrounded the fallopian tube. Between every two stitches we put a strip of adhesive plaster, which, by keeping the parts in contact, hastened the healing of the incision. We then applied the usual dressings, put her to bed, and prescribed a strict observance of the antiphlogistic regimen. In five days I visited her, and much to my astonishment found her engaged in making up her bed. I gave her particular caution for the future; and in twenty-five days, she returned home as she came, in good health, which she continues to enjoy.

Since the above case, I was called to a negro woman, who had a hard and very painful tumor in the abdomen. I gave her mercury for three or four months with some abatement of pain; but she was still unable to perform her usual duties. As the tumor was fixed and immovable, I did not advise an operation; though from the earnest solicitation of her master, and her own distressful condition, I agreed to the experiment. I had her placed upon a table, laid her side open as in the above

case; put my hand in, found the ovarium very much enlarged, painful to the touch, and firmly adhering to the vesica urinaria and fundus uteri. To extract I thought would be instantly fatal; but by way of experiment I plunged the scalpel into the diseased part. Such gelatinous substance as in the above case, with a profusion of blood, rushed to the external opening, and I conveyed it off by placing my hand under the tumor, and suffering the discharge to take place over it. Notwithstanding my great care, a quart or more of blood escaped into the abdomen. After the hemorrhage ceased, I took out as clearly as possible the blood, in which the bowels were completely enveloped. Though I considered the case as nearly hopeless, I advised the same dressings, and the same regimen as in the above case. She has entirely recovered from all pain, and pursues her ordinary occupation.

In May 1816, a negro woman was brought to me from a distance. I found the ovarium much enlarged, and as it could be easily moved from side to side, I advised the extraction of it. As it adhered to the left side, I changed my plan of opening to the linea alba. I began the incision, in company with my partner and colleague Dr. William Coffer, an inch below the umbilicus, and extended it to within an inch of the os pubis. I then put a ligature around the fallopian tube and endeavored to turn out the tumor, but could not. I then cut to the right of the umbilicus, and above it two inches, turned out a scirrhous ovarium, (weighing six pounds) and cut it off close to the ligature, put round the fallopian tube. I then closed the external opening, as in the former cases; and she complaining of cold and chilliness, I put her to bed prior to dressing her—then gave a wine glass full of cherry bounce, and thirty drops of laudanum, which soon restoring her warmth, she was dressed as usual. She was well in two weeks, though the ligature could not be released for five weeks; at the end of which time the cord was taken away; and she now, without complaint, officiates in the laborious occupation of cook to a large family.

The brevity and the rather loose manner in which these cases were recorded exposed Dr. McDowell to criticism and his report was reviewed rather sarcastically and doubtingly. Dr. James Johnson, the caustic editor of the London *Medico-Chirurgical Review,* did not hestitate to take advantage of the opportunity and declared outright his total disbelief of Dr. McDowell's statements. A few years thereafter, when the accuracy of the report had been fully confirmed, he frankly acknowledged his previous error saying: "A back settlement of America—Kentucky, has beaten the mother country, nay, Europe itself, with all the boasted surgeons thereof, in the fearful and formidable operation of gastrotomy with extraction of diseased ovaria. . . . There were circumstances in the narrative of some of the first three cases, that raised misgivings in our minds, for which uncharitableness we ask pardon of God, and of Dr. Mcdowel of Danville." [1]

If we remember the conservatism of the old world and the egotism of

[1] *The Medico-Chirurgical Review*, n. s. vol. 5, October, 1826, p. 620 (re-published by Richard Wood, New York).

humanity we can appreciate why the operation was so universally condemned by the surgical leaders in almost all the largest cities of almost every country, a condemnation that was intense and that continued as such over an unusually long period of time, even after the doctors of these various countries had recognized and successfully performed the operation.

In the *Repertory* for October, 1819, Dr. McDowell reported two more cases and in connection with them incidentally alluded to his critics and their criticisms to this effect:

> I thought my statement sufficiently explicit to warrant any surgeon performing the operation, when necessary, without hazarding the odium of making an experiment, and I think my description of the mode of operation and of the anatomy of the parts concerned, clear enough to enable any good anatomist possessing the judgement requisite for a surgeon, to operate with safety. I hope no operator of any other description may ever attempt it. It is my most ardent wish that the operation may remain to the mechanical surgeon ever incomprehensible. Such have been the bane of the sciences, introducing themselves into the ranks of the profession with no other qualification, but boldness in undertaking, ignorance of their responsibility and indifference to the lives of their patients; proceeding according to the special dictate of some author as mechanical as themselves, they cut and tear with fearless indifference, incapable of exercising any judgement of their own in cases of emergency; and sometimes without possessing the slightest knowledge of the anatomy of the parts involved. The preposterous and impious attempts of such pretenders can seldom fail to prove destructive to their patients and disgraceful to the science. It is by such the noble science has been degraded, in the minds of many, to the rank of an art.

It was not expected that anyone at that time would realize that the reports of these cases really represented the birth of that brilliant and marvellous division of the healing art known as the domain of abdominal surgery.

Dr. McDowell's contributions to literature were few. Consequently there is no accurate knowledge at hand as to the extent and range of his surgical activities, the two reports previously mentioned being the only writings of this illustrious pioneer now extant. He was for years almost the sole occupant of the field of surgery in the West. All the important operations for hundreds of miles around were performed, for a number of years, exclusively by him. The Medical Society of Philadelphia, at the time the most distinguished of its kind in this country, sent him its diploma in 1817, and the University of Maryland, in 1823, conferred upon him the honorary degree of Doctor of Medicine, establishing the fact that he attained national distinction before being credited with his epoch-making ovariotomy. It is known that he operated successfully for

bladder stone 32 times, the subject of one of these operations being James K. Polk, afterwards President of the United States. He paid much attention to hernia, frequently relieving strangulation by operation. His epoch-making ovariotomy was performed fourteen years after his entry into practice, between which time and his death in 1830 he is known to have operated on thirteen patients for the relief of ovarian tumors with 8 cures, 4 deaths and one failure, in the latter instance the operation being abandoned on account of adhesions. His delay in the publication of his reports, their rather loose wording, the paucity of medical literature, the absence of facilities for rapid communication, and the incredulity of the then surgical world deferred the recognition of his marvelous attainment and the bestowal of the honor which a grateful profession now accords him. It has been truly said that " no one age has ever witnessed the birth and the maturity of any branch of human knowledge." Dr. McDowell and his patient, Mrs. Jane Todd Crawford, launched upon its career a lusty infant which through the years has grown into a magnificent, virile manhood. Little did Dr. McDowell appreciate its possibilities of development while many of his contemporaries ridiculed the idea of its usefulness.

> Seven cities claim Homer dead
> Through whose streets the living Homer begged his bread.

Today all proclaim it a hero, paying grateful homage and admiration whilst fondly recounting its struggles from obscurity to the pinnacle of fame. The eyes of the medical world have long turned toward Danville and the McDowell home as the magic foundation from which sprang the current of surgical thought, which, coursing through the years, has permeated the field of medical practice the world over, to the everlasting benefit of mankind.

In the words of Schachner, Dr. McDowell's historian, " He placed in the diadem of the art and science of surgery its most brilliant gem and in the eons of time becomes the indirect emancipator of countless millions of human beings from protracted suffering and premature deaths." [3] As we view the home as it existed in 1809 we look in vain for the various factors which today make for the safety of surgery. History and tradition tell us that Dr. McDowell, in lieu of these aids, possessed a compensatory acumen in correctly assessing the value of symptoms, an uncanny insight, and that most important attribute of the surgeon, surgical judgment. He was noted for his ingenuity, his independence of thought, and enthusiasm

[3] August Schachner, *Ephraim McDowell*, Philadelphia and London, J. B. Lippincott, 1921, p. 58.

of purpose combined with discernment to perceive, courage to undertake, and patience to carry through. A modest and unassuming man, with a consciousness of right, unsupported and alone, in defiance of professional obloquy, he perfomed operation after operation with astonishing success and saved from the grave the victims of a disease until then acknowledged to be incurable. "From his birth to his death he belonged to the aristocracy of his time and place. By aristocracy we mean more than that which the term usually implies. It was not an aristocracy of wealth and leisure, it was more, it represented the foremost citizens in a new and aggressive country. Pretentiousness was notably absent, and in its place were the simplicity, independence, and self-reliance of the truly vigorous frontier people." [8]

Mrs. Crawford was a woman of intrepidity and fearlessness, capable of weighing in the balance the chances of life and death, and having done so, she abided with Christian resignation the result of her choice, reciting selections from the Psalms during the time of the operation. Confidence, reverence, respect, and a deep religious conviction rounded out a character well suited to meet the vicissitudes of frontier life and to submit to the unknown in an effort to be rid of her tumor. Both of the actors in this historic epoch possessed the qualities of simplicity, of faith, of determination and of greatness, which attained full fruition in the crucible of frontier experience. Both possessed vision, courage, and insight in giving to society that which has proved one of its greatest boons. The best life in the generations and nations that are gone still lives in our civilization, proving conclusively that society advances only in proportion as it receives the enduring service of the best.

When one considers the countless millions of human beings benefitted by abdominal surgery, to the attainment of which Dr. McDowell's exploit pointed the way, the beautiful tribute paid him by Dr. David Yandell during the closing years of the past century takes an added significance. In contrasting the fame of the statesmen, the orators and the military men of Kentucky he said: "Chief among all these is he who bears the mark of our guild, Ephraim McDowell. For the labors of the statesman will give way to the pitiless logic of events, the voice of the orator grow fainter in the coming ages and the deeds of the soldier find peace only in the library of the student of military campaigns: while the achievement of the village surgeon, like the widening waves of the inviolate sea shall reach the uttermost shores of time, hailed by all civilization as having lessened the suffering and prolonged the span of human life."

[8] Schachner, *ibid.*, p. 206.

THE EARLY MEDICAL SCHOOLS OF KENTUCKY *

HAMPDEN C. LAWSON

The story of formal medical education in Kentucky begins with one school, the Medical Department of Transylvania University, and ends with another, the University of Louisville School of Medicine. It covers a period of a century and a half, during which the medical center shifted from Lexington to Louisville, grew into national importance, and declined when the facilities of even the larger community were exhausted by the large number of schools which were established. Kentucky history, whether it be political, economic, or social, is a peculiar blend of lofty ideals, an adventurous pioneer spirit, and bitter struggles in which no rules were observed. The history of the state's medical schools has a typical Kentucky flavor, which should not be diluted in the telling.

Like nearly all schools of the past century, the Kentucky schools were proprietary in character. University affiliation, where it existed, was almost entirely nominal. The schools were operated as commercial enterprises, and were expected to collect sufficient sums from the students to provide a comfortable living for the faculty and to retire any indebtedness (1). The Transylvania faculty and the faculty of the first Louisville school were unique in their lack of indebtedness for buildings and equipment. The initial outlay for both these schools was subsidized by local public-spirited citizens. When the field became overcrowded, as it did toward the end of the century in Louisville, and the competition for business was keen, it is not surprising that the atmosphere lost something of the cloistered calm which is popularly supposed to pervade academic institutions.

Enough has already been said and written about the early days of the Medical Department of Transylvania University. At the time the trustees authorized its creation, in 1799, there were only four medical schools in the entire country, all of them in the East (2). The immediate success of the Lexington school, once it started operating in 1817, must have stirred the imagination of physicians throughout the state. There is no record of the number of schools which were dreamed up and abandoned while still in the nebulous state. The plans of Dr. Anthony Hunn, of Danville, however, have been preserved in the journal which he published

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"for the scientious reader," under the title *The Medical Friend of the People*. After the reader has been thoroughly persuaded that medicine as taught at Transylvania is of a low order of excellence, Hunn announces his intention to open "an Academy at his Plantation in Mercer County, Ky., two miles from Danville," where, if thirty students could be found to pay $30 each, he would be willing to share the treasure of scientific and medical knowledge which he had collected during a long life. His announcement closes with the additional offer:

> Anthony Hunn will teach also the English Grammer, French, German and Italian languages, as also the Latin and Greek—Likewise Music, the Forte' piano, and the Spanish and the Italian Guitars. The art of fencing with the small sword, of which, by diploma, he is master, he would likewise teach to a respectable number of pupils. This art is eminently calculated to fortify and render active the human frame (3).

Only in Louisville, however, was the threat to Transylvania serious. Louisville's Medical Institute had been chartered in 1833 to provide more adequate medical service in the Louisville Marine Hospital (4). Three years later, Louisville's city council offered the trustees of Transylvania a city square of desirable land and the sum of $40,000 for building purposes, as an inducement to move the medical school to Louisville.

Louisville at this time was an ugly, dirty, raw, frontier town, with a population of about 21,000. Because of the swamps surrounding the town on the south and west, and the large number of stagnant ponds within the city itself, mosquitoes were thick, and malaria was endemic. Yandell describes it as "one of the most sickly towns in the valley of the Mississippi—commonly called the graveyard of the west" (5).

The Marine Hospital had been built with state funds in 1823 to care for the passengers and crews of river vessels who were forced to stop over in Louisville while their boats were being taken through the falls of the Ohio River. During periods of low water, the falls could be negotiated only by unloaded boats. To beguile the travelers who were not so ill as to require hospitalization, the city offered large numbers of prostitutes, gamblers, and confidence men, and gangs of footpads who made life interesting for persons who wandered the unlighted streets after nightfall.

Comparing this brawling, disease-ridden town with Lexington, the "Athens of the West," the trustees of Transylvania and the citizens of Lexington rejected Louisville's offer for the medical school. The faculty, who could see the golden opportunities offered by the new location, and

who had unanimously agreed to move the school if possible, were accordingly in a receptive mood when Louisville's Medical Institute invited them to help form a new school, with the municipal subsidy which Transylvania had declined. Three of them, Charles Caldwell, John Esten Cook and Lunsford Yandell, moved to Louisville after they had been dismissed from Transylvania for disloyalty, and formed the nucleus for the new faculty. The Louisville Medical Institute, as a medical school, held its first session in 1837, with eighty students in attendance.

Daniel Drake was added to the Louisville faculty in 1839. At the request of his colleagues, he delivered the commencement oration for that year, which he addressed to the citizens of Louisville in the following exhortation:

> Regard the Institute as your daughter, and watch over it with the love and vigilance, which you extend to children when they commence life around you. You did not bring it into existence to create offices for favorites, but to benefit the city, the profession, and society at large—The influence of an enlightened public opinion alone, can be relied upon to keep it in health and vigor (6).

Drake's admonition was superfluous. The physicians of Louisville who were not on the faculty watched its affairs with vigilance, if not with love. A chair in the Institute assured all the private patients a professor could handle. In addition, the income from teaching itself provided a comfortable living without any other activity. Each professor's lectures cost the student $15 for a session, two hundred matriculates yielding a gross income of $3000 for each member of the faculty. The Institute was not in debt, and operating costs were negligible. The greater part of the tuition was accordingly returned to the professors at the end of the session as an emolument. Most of the professors supplemented this comfortable income by taking private pupils, and some of them offered special summer courses, for additional fees.

Criticism of the faculty was freely voiced in meetings of the city council, in the pages of the newspapers, and in privately published handbills and pamphlets. A broadcast published in 1840, and signed by twenty-one local physicians, enters a plea for a faculty who could command the respect of the medical profession, in place of the "ejected professors of other schools," and charges the Institute with such academic laxity as to matriculate students who could not read, a charge with which modern medical teachers can sympathize (7).

An anonymous pamphlet published in 1842 indulges in personal attacks upon individual professors. Samuel D. Gross, who had been brought

down from the Medical Department of Cincinnati College when Joshua Flint resigned in 1839, was singled out for some especially pungent remarks:

> It was said by some sagacious wag in Cincinnati, upon the accession of Gross to the Louisville School, that as Louisville had taken the head, Drake, away from the Cincinnati Medical College, she was welcome to its other extremity, Dr. Gross (8).

The Louisville Medical Institute was joined with a newly formed school of law, in 1846, to form the University of Louisville, and its name changed to "The Medical Department of the University of Louisville."

Joshua Flint's resignation was the first move toward the creation of a second Louisville medical school. Flint joined with other disaffected physicians in persuading the Funk Seminary, at LaGrange, Ky., to change its name to "The Masonic University of Kentucky," and to open a Louisville school as its medical department (9). The new school, which was called the Kentucky School of Medicine, announced its first session in 1850, in the following language:

> In making the announcement of the first session of the Kentucky School of Medicine, the faculty respectfully invite the attention of the profession to the fact, that with a single exception, the organization embraces the late faculty of the Medical Department of Transylvania University. The session of the Transylvania School having been changed from a Winter to a Spring term, her faculty determined, in conjunction with Professors Flint and Powell, to profit by an opportunity offered by the President and Trustees of the Masonic University to establish the Kentucky School of Medicine at Lousville (10).

Having fulfilled its destiny, the Masonic University and Funk Seminary expired a year after giving birth to the Kentucky School of Medicine, and the new school was reorganized, without university connections, with Joshua Flint as dean. Flint finally became reconciled to the University of Louisville and returned to its faculty in 1857.

Neither the University of Louisville nor the Kentucky School required any academic training of entering students. In order to become a candidate for the degree of Doctor of Medicine, a student was required to have studied medicine for at least three years with a reputable physician, who was listed on the books of the school as his preceptor. A degree was awarded after attending two regular sessions of the school, of five months each, and completing a satisfactory thesis and examination. Practitioners of medicine who could produce evidence that they had been engaged in reputable practice for at least four years, could become candidates for degrees after attending a single session of lectures (10, 11).

The subject matter for the second session was exactly the same as for the first. The two Louisville schools, in all these respects, followed the prevailing practices of medical schools throughout the country (12).

The creation of the second school in Louisville did not result in the large influx of students which had been expected. Even the closing of the Transylvania School in 1859 did not help, as the classes in Lexington had shrunk, by this time, almost to the vanishing point. Neither school found itself with enough resources to resume satisfactory operations after the Civil War. A merger was accordingly agreed upon in 1866, under the terms of which the Kentucky School was to be taken over by the University, and its charter surrendered. This natural-seeming transaction is rendered remarkable by the fact that the signatories, for the Kentucky School, were the four surviving members of the original board of regents, to whom the charter had been granted in 1850. Only one of these was still a member of the board when the merger was consummated (13, 10).

The union of the two schools lasted for one session, during which an enlarged coalition faculty taught a class of modest size. At the end of the session five members of the former Kentucky faculty were dismissed, for reasons which they insisted were entirely economic. With the announcement that their charter had not been surrendered by duly constituted authorities, they reopened the Kentucky School (10). The University's interest in this maneuver appears to have been short-lived. Louisville was now in a period of rapid growth, reaching a population of 150,000 in 1870, and the number of medical students increased sufficiently to support both schools in comfort. Two new wings were added to the Marine Hospital, nearly doubling its capacity, and its name was changed to "The Louisville City Hospital" (4). But the diversion of interest was due largely to the advent of two new competing medical schools.

A group of younger physicians, recently returned from military service, and eager to capitalize on the increasing importance of Louisville as a medical center, organized a third school in 1869, under the name of "The Louisville Medical College." Without any pretense of university affiliation, they made use of a charter which had been granted in 1854, but never exercised, for the establishment in Louisville of a medical school which was to be called "The Clay School of Medicine" (1).

The fourth school, known as the "Hospital College of Medicine," was established in 1873, as the Medical Department of Central University, a Presbyterian school with an academic department located at Richmond, Ky. The faculty of the University of Louisville attempted to forestall

this latest competition by offering to teach spring classes for Central University, and to obtain the use of the University of Louisville's buildings for a spring school. Central University was to enjoy the prestige of a medical department, but it was to be staffed by the faculty of the University of Louisville, who would enjoy a substantial augmentation of income. The plan was rejected by Central University (13).

The two other Louisville schools were more successful in a scheme to burn the candle at both ends. In 1874 the Kentucky School of Medicine was reorganized as a spring school, with sessions beginning in March, shortly after the closing of the other schools, and lasting through June. Arrangements were made to share buildings and equipment with the Louisville Medical College, which continued to hold fall sessions. The faculties of the two schools were reorganized, so that each professor held identical appointments in both (10). Edwin S. Gaillard, editor of the *Richmond Medical News*, who had come to Louisville in 1869 to join the Kentucky School faculty, was made dean of both schools (14).

Students at the Louisville Medical College were encouraged to enroll at the Kentucky School for the spring session. Entering the Louisville College in September, and taking the second session in the spring at Kentucky, they were ready for the degree the following June. Upon completing the spring session at Kentucky, they received degrees from both schools. This bargain in medical education was made even more enticing by a reduction in tuition, under the guise of "beneficiary scholarships." These were awarded on the recommendation of physicians, clergymen, newspaper editors, and public officials throughout the Southwest. Full tuition charges, as in the University, were $120 per session, but holders of scholarships paid only $40.

Many of the medical journals of the last century were little more than house organs for the competing proprietary schools. In Louisville, the *American Medical Weekly*, started in 1874 by Gaillard to promote the interests of his two schools; and the *Louisville Medical News*, started in 1876 by Richard Cowling and William H. Galt in behalf of the University, were frankly and robustly partisan.

The first number of the *Medical News* opens an attack on Gaillard's schools with an editorial entitled "Quick Sales and Small Profits." Later, after the Association of American Medical Colleges, at its organization meeting, had condemned accelerated, low-cost medical education, the *Medical News* issued an ultimatum, calling upon the Louisville Medical College and its affiliate to mend their ways or suspend operations. Gaillard's reply in the *Medical Weekly* manages to be both Olympian

and obscene: "If a couple of boys armed with urethal syringes were to appear before the Garrison of Gibraltar and send in their 'ultimatum,' the act could not be as ludicrous as the 'Ultimatum' of the Louisville Medical News addressed, in their last issue, to the Louisville Medical College" (16). The obscenity was a tactical error, for it made it possible for the *Medical News* to reply, in the next number: "It is respectfully suggested that, in view of the nature of the Gibraltar we are besieging, *rectal* syringes would be conspicuously more appropriate" (16).

In the last two decades of the nineteenth century, four additional schools were started in Louisville, to bring the total to eight. Two of these were schools for Negroes, and one was a homeopathic school, all small and now extinct. The last major school, established in 1898, was a rebirth, in Louisville, of the Medical Department of Transylvania University, operating at the time under the title of "The Kentucky University." Formed by a final upheaval in the faculty of the Kentucky School of Medicine, it grew rapidly, and within three years boasted as many students as its older rivals.

For the last quarter of the century, Louisville vied with Philadelphia for the dubious honor of having the second largest medical student population in the country, New York remaining consistently in first place. In 1874 Louisville had 570 students, Philadelphia 600. In the final decade, when Louisville sometimes outranked Philadelphia (17), there were between 1,200 and 1,500 medical students in the city, whose population was not quite 200,000 (18). One of the survivors of the period, who remembers the impact of this horde of medical students upon the city, insists that it was customary at the time to classify inhabitants of Louisville in four categories: white persons, colored persons, dogs, and medical students, in descending order of social acceptibility.

This story of the early Kentucky schools ends with the beginnings of the reform in medical education early in the present century. Louisville was described by the Council on Medical Education of the American Medical Association as one of "five especially rotten spots" in the country, and as such was one of the first medical centers to receive attention. It had already begun to fall behind in the competition for medical students when the reform started in 1902. Its various medical faculties for this reason offered relatively little resistance to the recommendation of the Council that the "big five," the University of Louisville, the Louisville Medical College, the Kentucky School of Medicine, the Medical Department of Kentucky University, and the Hospital College of Medicine, be consolidated to form one strong school. The absorption

of the other schools by the University of Louisville, and the development of a modern, university-controlled medical school, were accomplished with facility (19). The reform was completed in Louisville before it had gotten well under way in other cities. The end of the story finds Kentucky in a pioneer role, as at the beginning.

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THE INFLUENCE OF KENTUCKY MEDICAL SCHOOLS ON MEDICINE IN THE SOUTHWEST *

LEWIS J. MOORMAN

Time permits only a few brief references to the profound influence of Kentucky Medical Schools in this wide area so important in the development of our country. Justly, it may be said that modern medicine emerging from medievalism was carried from Europe to Colonial America. Here, in spite of many unfavorable odds as Western civilization gradually evolved, physicians did their best to care for the sick and to improve environment.

As the need of medical education became obvious, the apprenticeship system was developed, and further to fill the gap the clergy encompassed both soul and body with comforting psychosomatic effect. As time passed, lecture courses in anatomy, materia medica, and obstetrics developed and a few of the more ambitious students and teachers sought further scientific training through study abroad. This ultimately led to John Morgan's famous "Discourse upon the Institution of Medical Schools in America" which he had conceived under Cullen and the Monroes in Edinburgh, written in Paris and submitted to Fothergill, Hunter, and Watson in London for approval. This remarkable discourse resulted in the first concerted effort to provide organized medical education in America and the first medical school was founded in Philadelphia, in 1765. Through the influence of this initial nucleus other schools quickly arose.

Finally under the call of the wild, hardy pioneers nurtured and protected by these developments pushed their way through the Cumberland Gap and established that formidable wedge which sundered the aborigines' "Happy Hunting Ground" and initiated the long continued struggle for supremacy.

By the turn of the last century, civilization had threaded the wilderness, completely overrun the plains, and surrounded and subdued the Indians. The accompanying maps from Dale's "Two Mississippi Valley Frontiers" tell the story. Having discarded the war paint, laid down the tomahawk, and ceased scalping, stolidly and silently the Indians were still resenting the white man's invasion and resisting his culture. In

* Read at the Twenty-second Annual Meeting of the American Association of the History of Medicine, Danville, Kentucky, May 24, 1949.

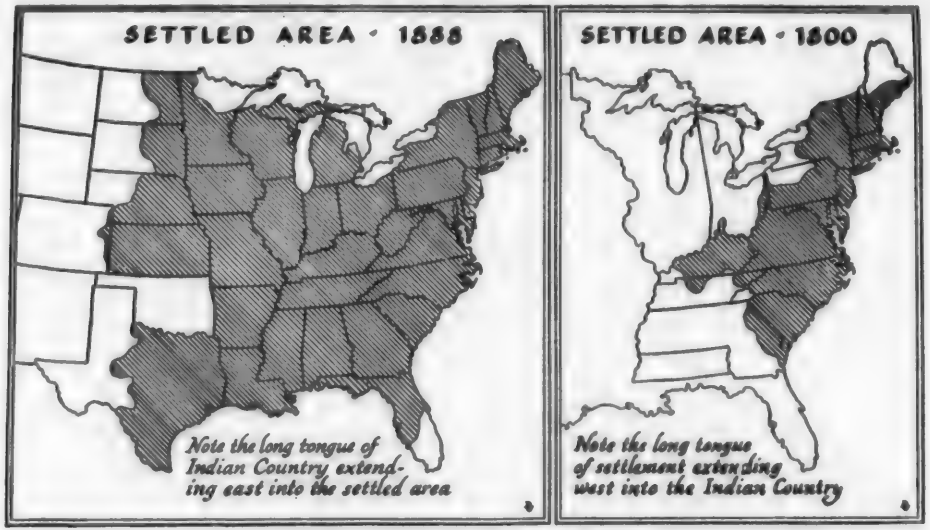
SETTLED AREA - 1888
Note the long tongue of Indian Country extending east into the settled area
SETTLED AREA - 1800
Note the long tongue of settlement extending west into the Indian Country
TWO MISSISSIPPI VALLEY FRONTIERS.

Fig. 1.

The above maps from Dale's "Two Mississippi Valley Frontiers" show the progress of civilization which in a sense is synonymous with the influence of Kentucky medical schools. Dale, Edward Everett, *The Chronicles of Oklahoma,* Vol. xxvi, No. 4, 1948-49.

Oklahoma and Indian Territories, many of them were to be found on their last stand, wedging into civilization, just as civilization wedged into their rich Kentucky hunting grounds a century before.

It is impossible to adequately discuss the influence of Kentucky medical schools on the development of medicine in the Southwest without these introductory remarks suggestive of their influence upon the culture and the commerce of this productive region now committed to the task of feeding the world.

As this wedge of civilization, consecutively transfused with the blood of Virginia's best, widened the breach in the Indian's broad domain, the ingrained consciousness of intellectual needs and better medical care grew, and the Transylvania Seminary was conceived (1783) and later it was given the grant of a new charter (1798) and the name of Transylvania University. At the first meeting of the trustees (1799), a medical department was established.

As the settlers in buckskin and linsey-woolsey extended their domain and wrested from the wilderness its secrets and appropriated its resources, Transylvania University supplied physicians for the protection of the pioneers as they transformed the wilderness. Her graduates followed the border with knowledge and skills derived from one of the best equipped medical schools in the world, and, furthermore, they were working under the influence of the character and personality traits of teachers not excelled in the course of medical education.

Aside from the general principles discussed above, the development of medicine in this region has progressed from the primitive crudities of pioneer practices to the most highly developed scientific procedures. Employing Oklahoma as an example, the development has not only been remarkably swift, but for the Indians, it has been phenomenal. When the white man's doctor came, the Indian medicine man was with slight modifications still pursuing the methods and practices which Hippocrates discarded when he broke away from magic and harnessed religion and philosophy for medicine's first avowed psychosomatic frontier.

Today, the Indians accept modern medical care and hospitalization without objection. Thus, in less than two generations, the physicians in Oklahoma have had the unique experience of seeing people of primitive ways accept medical and hospital procedures representing the progress of twenty-five hundred years.

If only the tangible products of Kentucky's influence on medical education and hospitalization in the Southwest could be centered in Lexington

today, they would make a fabulous city of this one-time Athens of the West.

This vast Southwest territory with its various regions yielding to settlers in rapid succession made Kentucky medical schools hum with activity.

For more than twenty-five years of Transylvania's forty years of active service, her annual medical student population averaged well over two hundred, but, about 1849, virtually coincident with Dudley's retirement and the developmentof the Louisville schools, attendance at Transylvania rapidly declined. Fortunately, the school's demise and the death of the old colored janitor, Absolom Driver, were virtually coeval. I am convinced that in the composite of Transylvania's influence, this faithful servant rates with Brown, Dudley, Drake, Bush, Richardson, Short, Caldwell, Yandell, Skillman, Cook, Robert Peter, Bartlett, Bruce, Ridgeley, Smith, Cross, Mitchell, Marshall, Annan, Allen, Bullitt, and the famous Rafinesque.

With our distant perspective dimmed by the flight of time, it is difficult to realize the influence of these men on the American frontier. Their names, their personalities, their teachings, their methods of practice, together with their published writings, occupied the saddle and the buckboard, and helped put the covered wagons over the trail. Their pupils consolidated the gains of civilization as the frontier advanced with ever-expanding peripheries.

The far-flung horizons captured the imagination and soon the wilderness pioneers landed upon the sunlit prairies. Here the log cabins were replaced by the dugout and the sodhouse and through innate American resourcefulness the commerce of the plains was established and consolidated. This commerce could not be maintained without settled homes and fixed communities closely identified with the soil. In the songs of Hesiod, the basic elements of a farmer's life were an ox, a house, and a woman. In the winning of the West, the woman came before the ox, and with her own hand she helped build the house.

After following the frontier through Arkansas, Louisiana, Missouri, and Kansas, Transylvania physicians fought for the independence of Texas, participated in the founding of the Republic, the enforcement of law and order, and finally it was a physician, Dr. Anson Jones, of Jefferson Medical College, who served as the Republic's last president and brought statehood to the Lone Star State.

In pioneer settlements, the physician was the prime mover in com-

I. MAP SHOWING THE ACTUAL NUMBER, LOCATION, AND DISTRIBUTION OF MEDICAL SCHOOLS

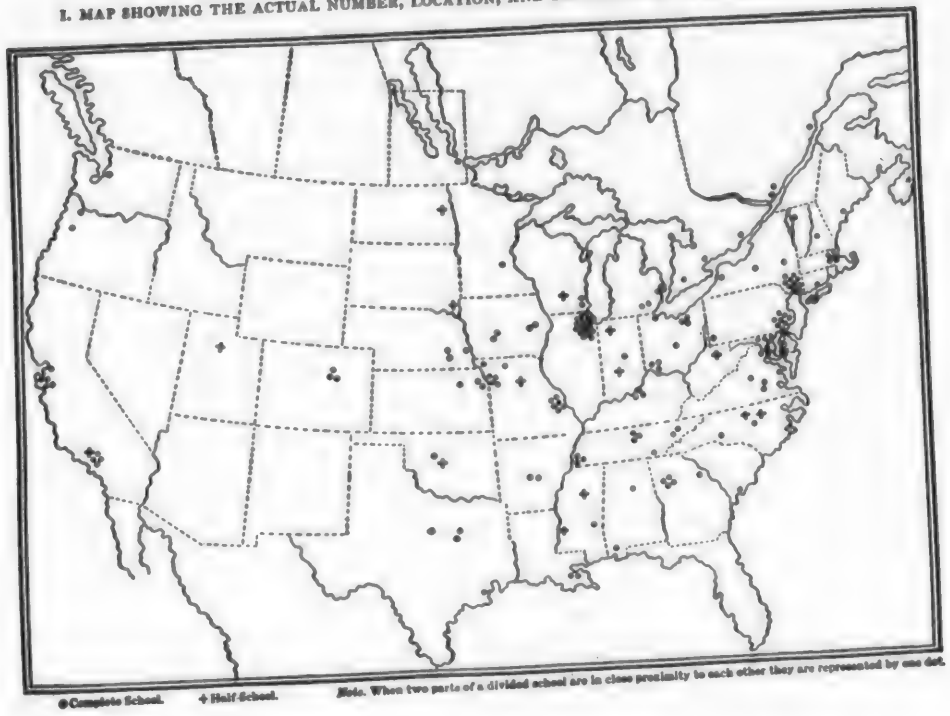
● Complete School. + Half School. Note. When two parts of a divided school are in close proximity to each other they are represented by one dot.

Fig. 2.

The above map copied from Flexner's report shows the number and distribution of proprietary medical schools when his survey was made in 1907. Flexner, Abraham, *Medical Education in the United States and Canada*, Carnegie Foundation for the Advancement of Teaching, Bulletin No. 4, 1910.

Advancement of Teaching, Bulletin No. 4, 1910.

II. MAP SHOWING THE SUGGESTED NUMBER, LOCATION, AND DISTRIBUTION OF MEDICAL SCHOOLS

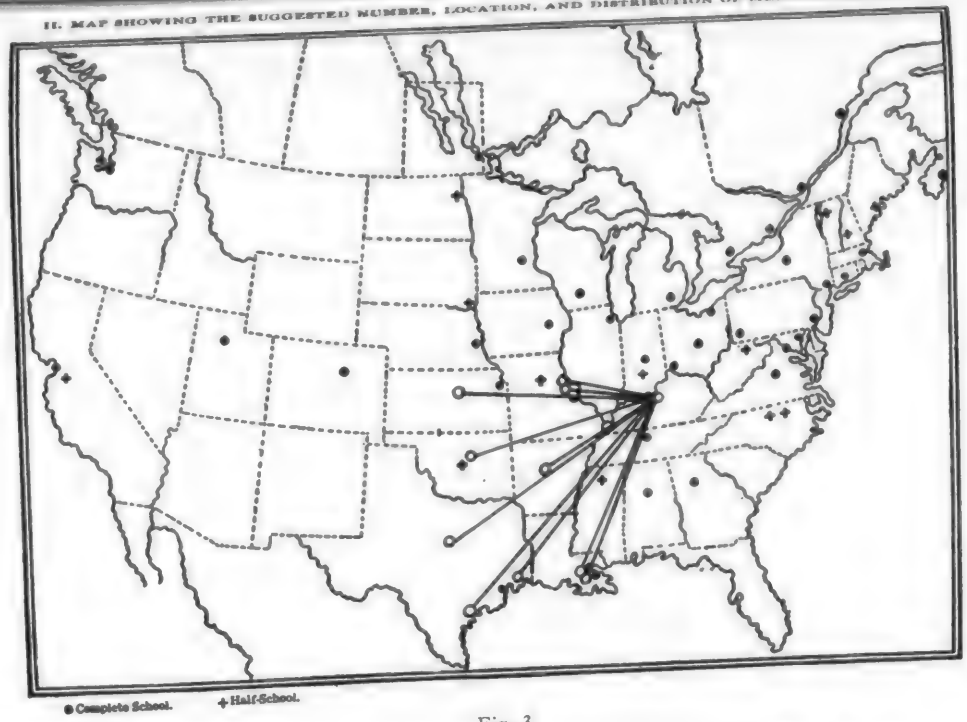

Fig. 3.

The above map shows the number and location of schools recommended by Flexner. It is interesting to note that this map does not show a school for Kentucky. The superimposed lines and circles added by the author of this essay indicate the approved schools now in Louisiana, Missouri, Arkansas, Kansas, Texas and Oklahoma, all directly or indirectly influenced by the Kentucky schools. Flexner, Abraham, Carnegie Foundation Bulletin No. 4, 1910.

munity progress. As a rule, he preceded the professor and the priest. He was the advanced exponent of science and culture. He helped to weave the web which ultimately brought the penalties of civilization and caused the pioneer to lose the freedom he had gained through the gift of loneliness.

In the past century and a half, Kentucky medical schools have had a large part in supplying the best medical care any pioneering people had had in the history of the world. As population shifted and poured its hordes into the Southwest, the need for more doctors with less travel and expense brought about the establishment of medical schools at strategic points throughout the area. Truly, it can be said that not a single one of these was founded and developed without the influence of Kentucky schools.

With the above discussion as a backdrop, it is obvious that the historian is confronted with many incomprehensible factors making adequate appraisal impossible.

It was approximately one hundred years from the founding of the Medical College of Maryland, the first of the proprietary schools, until the Carnegie Foundation for the Advancement of Teaching engaged Abraham Flexner and started him on the trail of medical education in January 1907. Flexner inspected the existing 155 schools in less than a year and, with sweeping revelations and recommendations, he created a furor which elevated the methods of medical education and promptly reduced the number of schools.

The accompanying maps from Flexner's report (see figs. 2 and 3) showing the medical schools at the time of his notable survey, the reduction in the number of schools recommended by him, and the present distribution of approved medical schools in the Southwest as indicated by the superimposed lines afford some graphic evidence of what has happened in the field of medical education. These latter with their appropriations for support, their research foundations and endowments represent an influence beyond comprehension. Any attempt to measure this tangible influence must include a consideration of the medical schools before the Civil War and all those present and past organized since the War. Considering the limited scope of this paper, we present only a very brief discussion of the influence of Kentucky schools on the original scattered nuclei of medical education and its continued operation in the development of modern teaching institutions and the high type of organized medicine in the Southwest now representing the purest form of medicine as a free enterprise to be found anywhere in the world. This

is remarkable in view of the uncertain status and often unpraiseworthy position of proprietary schools while striving to meet the medical needs of a century of territorial expansion and rapid development.

Coincident with these reforms, medicine in the Southwest was favorably influenced by a graduate of the University of Louisville crusading in behalf of better medical organization. This was Dr. J. N. McCormack of Bowling Green, Kentucky, representing the American Medical Association.

In further consideration of the influence of Kentucky schools, I quote from J. N. McCormack's *Some of the Medical Pioneers of Kentucky*[1] (p. 83):

> The professors who resigned from Transylvania and accepted chairs in the Louisville Medical Institute soon found themselves surrounded with large classes of young men from all sections of the great and growing Southwest.

The increasing need for physicians in this area and the difficulties and the cost of travelling to Kentucky or across the Appalachians for a medical education were stirring the imagination of forward-looking members of the profession in the larger centers of population. With Kentucky as their example, they were thinking of the establishment of medical schools to meet these needs.

Louisiana was the first to found an independent medical school. While it is impossible to establish any direct influence between the founding of this school (1834) and the Transylvania school, an indirect influence is obvious and the passage of time indicates both direct and indirect influence in the progress of medical education in Louisiana.

In Missouri, Transylvania University supplied the motivating influence. Dr. Joseph Nash McDowell, son of Ephraim McDowell, and a graduate of Transylvania, organized the first medical school in Missouri. In 1840, under the authorization of Kemper College, he and four colleagues founded McDowell's Medical College in St. Louis and gave their first course of lectures in 1840-41. This school united with the Medical Department of St. Louis University, later known as Pope's College, to form the Medical Department of Washington University (1899).

In Arkansas, the influence followed the general pattern and stimulated the development of medical education through the founding of Arkansas Industrial University Medical Department (1879) leading to the present University School of Medicine in Little Rock. No definite Kentucky motivating influence has been discovered.

[1] Published by the Kentucky State Medical Association, Bowling Green, Ky., 1917.

MAPS OF DISTRIBUTION OF GRADUATES AT PRESENT TIME

Figure I. Map of United States.

Each dot representing a living graduate of the University of Louisville School of Medicine with the exception of Kentucky, Indiana, and West Virginia, where one dot is equivalent to four graduates.

Fig. 4.

Reproduced from the *Kentucky Medical Journal*, Centennial number, University of Louisville, March, 1937.

What we have said of Arkansas applies to Kansas where the first organized effort resulted in The Kansas Medical College at Independence (1872) which was closed in 1875. The University of Kansas School of Medicine at Lawrence and Kansas City was organized in 1880. The clinical department in Kansas City was not established until 1905.

Texas, coming into the Union in 1845, did not have a medical school until 1890 when the Medical Department of the University of Texas was established at Galveston. It is impossible to establish direct influence of Kentucky medical schools, but prior to that time the Medical Department of Transylvania University and the Louisville schools had exercised a motivating influence in all the state's educational and political activities. Tardy development was largely due to economic difficulties, Indian uprisings, and Mexican raids.

No later than 1839, Mirabeau B. Lamar, the erudite President of the Republic, was urged to consider the establishment of a seminary "of an elevated and comprehensive character." According to Nixon,[2] he received a communication from Dr. G. F. H. Crockett of Mississippi proposing a medical school and setting forth principles and standards for its organization and administration. Chief among Crockett's qualifications was the statement that he had graduated at Transylvania University in 1822. His ideas on medical education which in some respects may be compared to John Morgan's proposals for Pennsylvania did not materialze. Many years later (1858), the University of Texas was created with a provision for "instruction in surgery and medicine." The Medical Department in Galveston was not placed in operation until 1890.

Later, Baylor University was organized in Dallas under the direct influence of Dr. Charles M. Rosser—a graduate of the University of Louisville. Baylor was moved to Houston in 1947 and is being developed into a great medical center supported by endowments running into many millions. The Southwestern Medical College of Dallas, a thriving institution, is seeking state affiliation and the state supported school at Galveston is considering the establishment of a branch at San Antonio. The influence of Kentucky medical schools in Texas has been decidedly obvious from San Jacinto to the present time.

In Oklahoma, even during the territorial days, many of the best physicians were graduates of the Louisville schools. The University of Oklahoma School of Medicine for the preclinical years was organized at

[2] Pat Ireland Nixon, *The Medical Story of Early Texas, 1528-1853.* Mollie Bennett Lupe Memorial Fund, 1946, pp. 390 ff.

Norman, Oklahoma, in 1900. Epworth College of Medicine in Oklahoma City was organized in 1904 with both direct and indirect influence of Kentucky schools. In 1910, Epworth College of Medicine became the clinical department of the University of Oklahoma School of Medicine. Under this union, the school was brought into line with the accepted principles and standards of medical education by Dr. LeRoy Long, an honor graduate of the University of Louisville. In fact, Louisville has supplied the University of Oklahoma School of Medicine wth two Deans, the best of teachers in the major departments, and, today, Kentucky influence is running high in the three million dollar Oklahoma Medical Foundation and Research Institute now under construction.

In this Southwest area, there are eleven approved medical schools, a number of allied laboratories and research institutes, and medical clinics. The area gives rise to the publication of thirty-three medical and allied journals not mentioning county medical and institutional bulletins.

As may be inferred from the above brief survey, the influence of Kentucky medical schools in this area cannot be accurately estimated, but it is exceedingly great. It becomes increasingly obvious as research goes on and, if the whole truth were known, we might justly conclude that Kentucky, with Lexington as the cradle of western science, stands in a relation to the Southwest comparable to that of Greece to the rest of the world during the period of Hellenistic supremacy. Maintaining this relationship is Kentucky's greatest challenge.

NOTES AND COMMENTS

A NOTE ON "CARUCARYA" OF BHOJA

D. V. S. REDDY

"Carucarya," a Sanskrit poetical treatise describing the daily regimen of a "Healthy and aesthetic way of living" as in some of our modern "Guides to personal hygiene," has not been adequately noticed or studied by Sanskrit scholars or Ayurvedic Pandits. The author of the work is Bhoja or Bhoja Raja. This work should not be confused with, or mistaken for, other poetical treatises, of the same name, in Sanskrit literature.

Aufrecht's *Catalogus Catalogorum* gives the following information regarding Carucarya:

1) "Carucarya" attributed to Dhanvantari—Oppert. 980, 1110. Both these manuscripts were in the private libraries in South India and one of them was stated to have 200 pages of 10 lines each.
2) Carucarya written by Kshemendra L. 2440 Report XXIII. Peters 1, 115. Printed in Kavyamala Series.
3) Carucarya by Bhoja Raja—K. 112, Burnell 136-B. A treatise on Achara and Neethi by Bhoja Raja(?) containing 290 *Granthas*, begins with "*Suneethi Sastra*. . . ."

As far as medical tradition and literature are concerned, there is no work called "Carucarya" by Dhanvantari. It may be that any of the larger treatises attributed to Dhanvantari contains hints as to health or that some work on hygiene may be attributed to Dhanvantari, as the fountain-head of all Ayurvedic knowledge.

With regard to the "Carucarya" of Kshemendra, it is mainly valued for its literary merit and as the work of a celebrated genius of the 11th century. This poem of about 100 Slokas deals with a good life—health of the body, as well as of the mind. The emphasis is on righteous conduct, gentle speech, noble thought, etc. It is a moral code rather than a guide to health.

My attention was first drawn some years ago to this unknown and lost treatise in Sanskrit by a casual or accidental perusal of a Telugu translation of Bhoja's "Carucarya." A Telugu poem, written by one Mantri Appanna, belonging to the 14th or 15th century, contains about one hundred verses. Sri V. Prabhakara Sastry, who edited the Telugu

work for the Raja of Muktyala, a great lover and patron of medical literature in Andhra Country, stated in the introduction that "Carucarya" was originally composed in Sanskrit by Bhoja in the middle of the 11th century and that the Telugu version is a rough rendering and not an exact translation of the original. We shall not refer any further, in this note, to the Telugu version but shall focus our attention on the Sanskrit work and its author.

In the course of a search for manuscripts of the Sanskrit work one was found in the library of the Telugu Academy, Cocanada. This palm-leaf manuscript mentions King Bhoja as the author of the work, which is said to have been composed for the benefit of princes and good men. The text contains 136 Slokas.[1] Every Sloka is followed by a paraphrase or annotation in simple Telugu for the benefit of less learned people. The contents are arranged in the following order of headings: (1) Cleaning of teeth. Virtues of different kinds of twigs used as tooth brushes. (2) Baths and their effects. (3) Different kinds of flowers and their properties. (4) Various ointments applied to the body and their actions. (5) Clothes suitable for different seasons. (6) Nine kinds of gems used in ornaments and their effects on the body. (7) Five metals and their medical uses. (8) Various articles of food and their influence on the body. (9) Thambula (Pansupari) and its health preserving properties. (10) Sexual intercourse and women to be shunned. (11) Necessity of good conduct.

The same library at Cocanada has another manuscript, "Dravyaratnakara," and in this medical treatise there is a portion under the subtitle, "Carucarya." Whether it is really a part of the larger book, or whether it had accidentally been inserted in that book in the course of copying or binding, is a question which intrigued me considerably. But, in subject matter and composition, this part of the bigger treatise closely resembles the smaller manuscript of "Carucarya."

Mr. Prabhakara Sastry stated that there are available two kinds of manuscripts of the Sanskrit work "Carucarya," one somewhat smaller while the other is a little larger. I have carefully examined the three paper manuscripts in the Madras Oriental Library, two manscripts in Telugu characters, and one manuscript in Nandinagari. The larger of the two paper manuscripts is said to have been copied from the Mysore manuscript. It begins with the heading "Jalotpathi," origin of water, and gives a

[1] This text has recently been printed in Telugu characters by Messers. Vavilla Ramaswamisastrulu and Sons. Madras.

section on medicinal properties and uses of different kinds of water in 850 Slokas before we come to " Carucarya " proper—as in the manuscript of the Telugu Academy, Cocanada. During a recent visit to Mysore, I made an enquiry regarding the manuscript of " Carucarya " in the Oriental Research Institute at Mysore. It corresponds to the larger variety of the manuscript in the Madras Oriental Library and also begins with the subject of " Jalotpathi " etc. and contains " Carucarya " in the later portion.

The other two manuscripts in the Oriental Library, one in Nandinagari (in good condition), and the other in Telugu characters (very old, with many lacunae) show almost the same arrangement and contents, in about three hundred and odd Slokas. These two also begin, like the smaller manuscript in the Telugu Academy, Cocanada, with the Sloka " Suneethi Sastra . . ." But it contains additional topics such as " Abyangana Vidhi " (on oil-bath) " Mauktika-Dharanam " (wearing of pearls); wearing of rings; thread round the waist, and effects of the shadows of various trees. The section on " Vastradharana " (clothing) is also more elaborate. So, it would appear that this particular type of manuscript is the original one from which some portions have been intentionally or otherwise deleted. The alternative view is that some new and additional matter has been interpolated into the original work.

As a historian of medicine, I have been keenly interested in comparing this treatise with the most famous literary product and the most popular medical work of the School of Salerno in the 13th century A. D., the *Regimen Sanitatis Salernitanum* containing " hints for the preservation of health " in which diet occupies a central place. It is also necessary to examine closely a small treatise by the scholar-physician, Maimonides of Cairo, in the 12th century A. D., giving directions for the preservation of health for the benefit of Egyptian princes. How far did Bhoja's "Carucarya " extend its influence beyond the frontiers of India? Did it influence the subject-matter only or only the manner of presenting, in a poetical form, the simple rules of health? Or was there a common and more ancient work from which Bhoja as well as the authors of the manual of Salerno and other medieval writers drew their material as well as literary form? This is a field in which the scholars of Sanskrit and of Arabic, and the archivists of medieval European records and manuscripts, can and ought to co-operate and help each other, to produce a rich harvest of international importance.

SILVER SUTURES

M. PIERCE RUCKER

Silver wire has played an important role in American surgery and gynecology. Marion Sims was unable to cure vesicovaginal fistula until he used sutures of silver wire. He (1) considered silver sutures, of which he claimed to be the originator, the greatest advance in surgery of his age. Silver wire also figured prominently in the development of the classical Cesarean operation. Of the first sixteen American operations in which the uterine incision was sutured, silver wire was the material in nine (2). Saenger (3) used this method in the first layer of his uterine suture.

Two of Dr. Philip Syng Physick's pupils wrote on metallic sutures in the third decade of the 19th century. Lavert (4), for his graduation thesis at the University of Pennsylvania, reported his experimental work on various kinds of ligatures. He tied the femoral artery in dogs with silk, lead wire, silver wire, etc. There was no suppuration when metallic ligatures were used but there was always pus when other kinds of ligatures were employed. J. P. Mettauer (5) used lead wire in staphylorrhaphy, perineorraphy, and the repair of vesicovaginal fistula with uniformly good results. Since both of these men were taught by Physick it was natural to suppose that they got their idea from him. However, I was unable to find in the literature any reference to Physick's use of metallic sutures. Mettauer says in his report on staphylorrhaphy, that he got his idea from Dieffenbach (6) who had used lead for staphylorrhaphy the year before.

Accordingly to Sir James Y. Simpson (7), Purman of Breslau used silver wire in the tongue in the 18th century and Milhes in 1746. Dieffenbach used lead wire in the palate in 1826. Mettauer used lead wire in the palate in 1827, in the perineum in 1833, and in vesicovaginal fistula in 1838. Gosset (8), in London, used gilded silver wire in the cure of a vesicovaginal fistula in 1833.

In the Library of the Mayo Clinic there is a volume of student notes of Dr. P. S. Physick's lectures on surgery in the years 1818 and 1819 by J. Moore that contains the earliest American reference to silver wire that I have found in a comprehensive search (9) of the literature. On page 58 under the head, *Twisted Sutures*, he says: "These are affected by means of a silver wire incased in a steel point which can be taken off at

and Twisted — Uneasiness of the —

Interrupted Sutures

[illegible] a simple stitch made by a needle pierce from one side of the incision to the other, thro' the edges of the wound, thus drawing the edges into contact and tie a knot; this however should not be drawn over the wound but a little to one side and the suture is complete —

Twisted Sutures

There are effected by means of a silver wire in each of which a steel point which can be taken off at pleasure, this is to be passed thro' the edges of the wound, from one side to the other — Which being done take off the steel point that it may not hurt the patient, and the wire remain behind, draw the edges of the wound in close contact by passing a thread several times round the wire — When the wound has united sufficiently to take off the thread, draw the wire out gently and the thread will come away —

Gun Shot Wounds

There are circumstances in the early periods as being a distinct species of wounds. — The lived colour which ensues accompanied with a black slough resolution and Gangrene, happen cannot them to suppose the effect must have resulted from either poison or from the part being Bruised, // because probably from poison and fire being

Fig. 1.

Page 58 of Joseph Moore's notes of Dr. P. S. Physick's lectures on surgery in the years 1818-19. Courtesy of the Mayo Clinic.

pleasure, this is to be passed thro' the edges of the wound, from one side to the other—Which being done take off the steel point that it may not hurt the patient, and the wire remains behind, draw the edges of the wound in close contact by passing a thread several times round the wire—When the wound has united sufficiently to take off the thread, draw the wire out gently and the thread will come away." I have looked through John Todd's notes of Physick's lectures taken in 1808 and 1809, and also manuscript abstracts from lectures on surgery delivered in the University of Pennsylvania, A. D. 1818 and 1819, both of which are in the Army Medical Library, and found no mention of silver wire. The abstracts make mention of sutures in the wounds of the tongue and neck, but there is no description of the sutures.

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MEDICO-HISTORICAL NEWS AND ACTIVITIES

CORRESPONDENCE AND REPORTS

DR. INGJALD REICHBORN-KJENNERUD

(June 27, 1865–August 7, 1949)

In a letter written last summer Dr. Reichborn-Kjennerud said: "I am having a race with death." He was hurrying to finish a supplement to his monumental work *Vaar gamle Trolldomsmedisin*, a supplement dealing with ideas regarding death in ancient magic and medicine. A constant seepage of blood from esophageal varices had for some time kept this once so rugged man in transit between home and hospital. When, during his last trip to the hospital, edema began to appear in his lungs he knew the race was over and quietly signed off.

"Our Reichborn-Kjennerud," as Sigrid Undset once designated him, loved this world and all that was in it, and in spite of his eighty-four years felt that there still was so much to be done. He was pleasant to look at as he walked the earth: tall, straight as a pine, a ready smile, blue eyes with a glint of the "golden nonsense" in his heart, and a touch of what we over here call old world elegance—a work of art hiding prodigious strength and energy.

He was born in the old cathedral town of Hamar where his father, Konrad Kjennerud (1837-1921), was director of schools. From his mother, Hermana Reichborn (1846-1921), he took the first part of his surname. (Looking at the dates, it is a strange coincidence that just as his father and mother died in the same year, Dr. Reichborn-Kjennerud's own wife, Aagot Jost, survived him only a short time, passing away in November, 1949). His formal studies began in Halden, another historic town, where he took students' examinations in 1883. For a while he devoted himself to philology, but soon turned to medicine and obtained his *Cand. med.* in 1891. During his student years he tutored in French and Latin as well as botany and histology. During his philological period he translated from the works of Victor Hugo and Prosper Merimée, and also assisted Carl Lumholtz in the writing of his work *Among Cannibals* (1888).

While he worked for a time as an assistant to Drs. Aksel Holst and Frölich during their famous Vitamin-C researches, his major interest had turned to surgery. He was granted a stipendium from the state to study abroad and visited Charcot's clinic in Paris, Kocher's clinic in Switzerland, and worked with Schleich in Hamburg. He rounded out his training on the surgical division of *Rikshospitalet* in Oslo. Soon afterwards he was appointed to the medical staff of the Norwegian army and rose in rank from Lieutenant to Chief Division Medical Officer (Divisionslege), retiring in 1930. During his army years the work carried him into different parts of the far-flung country, giving him an opportunity to study the folk customs in the different regions, as his army duties did not preclude private practice. In 1924 he received the degree of Doctor Medicinae with a thesis dealing with medical counsel in the Elder Edda (*Laegeraadene i den eldre Edda*) and herbs in Norwegian medical folklore (*Vaar folkemedisinske lægeurter*). From this time on, and es-

DR. INGJALD REICHBORN-KJENNERUD
(1865-1949)

pecially after his retirement from the army in 1930 and his settling in Oslo, medical history occupied all his spare time. Happily he now poured his accumulated knowledge of languages, botany, anthropology and the ways of men in all walks of life, into pamphlets, books, translations, and a correspondence recalling that of the 17th century scientists. His capacity for work was phenomenal, even to his countrymen, most of whom are no star-gazers.

In a country with only a little over three million inhabitants, one would not expect a chair at the university devoted exclusively to the history of medicine, but a yearly stipend was granted him by the Institute of Comparative Research in Human Culture. He had many co-workers among whom should be mentioned Frederik Grön and I. Kobro who were co-authors of the History of Medicine in Norway (*Medisinens Historie i Norge,* 1936). In 1920, with Hjalmar Falk and Nils Lid he formed a committee for the collection of medical folklore. This had already been begun in 1911 when Frederik Grön and F. G. Gade sent questionnaires on this topic to different sections of the country.

Norway is known to have been inhabited for the past 10,000 years, and for as long the inhabitants have wrestled with the sea and a soil abounding in rocks. The question of food values has been more important here than in countries favored with more than three months of summer and a richer soil. Dr. Reichborn-Kjennerud surely earned the enviable title of Useful Citizen in this field. During his army years he gave courses in the preparation of food during yearly maneuvers. With N. Schröder-Nielsen he wrote a cook book for the navy and the merchant marine (*Matstell til sjös,* 1938) in which are found not merely recipes—which this writer has tried and found excellent—but lists of vitamin contents of the various foods, methods of storage, diets in the case of illness on board, a reprint of laws regulating food suplies on merchant vessels, whaling ships and trawlers. There is even an admonition to stow apropriate food supplies for alien races.

As a form of recreation he translated Salerno's *Flos medicinae,* partly in verse form, directed the planting of an herb garden at Sarpsborg in 1931, and wrote numerous interesting pamphlets which it would take too long in this informal tribute to enumerate. Many of these pamphlets were published in translation in European and American journals. He was also a willing and enthusiastic contributor to the work of others, making suggestions, corrections or additions, and even reading proof. He was honored by scientific societies not only in his own country but in Denmark, Belgium, and Spain.

The work which will keep his memory green is his five-volume *Vaar gamle Trolldomsmedisin* (1928-1947), (Our ancient Trolldomsmedicine), a mighty reference book as well as fascinating reading. A Norwegian poet once compared a writer born in a small country to an eagle chained to a rock in a barnyard. A language read only by a handful of people! His words reaching only as far as the breath of his lips! Norwegian, however, unlike Finnish, Magyar, and Basque, is an Indo-European language, and anyone with a fair knowledge of the five major idioms should not be afraid to look for information in these volumes which are written in a simple, clear language. In these pages we human beings may learn something of the mystery of the past within us, of ancient sufferings and pleasures going back thousands of years.

ANNE TJOMSLAND.

ANNOUNCEMENTS

AMERICAN ASSOCIATION OF THE HISTORY OF MEDICINE TWENTY-THIRD ANNUAL MEETING, MAY, 21 to 23, 1950 BOSTON, MASSACHUSETTS

HEADQUARTERS: Somerset Hotel

GENERAL PROGRAM

SUNDAY, MAY 21, 1950

Afternoon Session

Somerset Hotel — Commonwealth Avenue

2:00 p. m.—Meeting of the Council.
6:00 p. m.—Reception, Informal Supper.

Evening Session

8:00 p. m.—Welch Centenary Celebration.

Speakers: Drs. Cohen, Shryock and Temkin of the Johns Hopkins University.

Demonstration of the Welch Film.

MONDAY, MAY 22, 1950

Morning Session

Boston Medical Library

9:30 a. m.—Miscellaneous Papers.

Exhibit: Prepared by Mr. James F. Ballard, Director, Boston Medical Library.

Afternoon Session

Boston Medical Library

2:00 p. m.—Business Meeting.
2:20 p. m.—Awarding of William Osler Medal.
2:25 p. m.—Awarding of William H. Welch Medal.
2:30 p. m.—*Fielding H. Garrison Lecture*: Rev. Roland H. Bainton, Yale University.
3:00 p. m.—Visit to Ether Dome, Massachusetts General Hospital; Visit to the Grave of Zabdiel Boylston.
5:00 p. m.—Tea: Faculty Room, Harvard Medical School.

Exhibit: Prepared by Miss Anna Holt, Librarian, Harvard Medical School.

Evening Session

SOMERSET HOTEL

8:00 p. m.—Annual Dinner.

Speakers: Professor George Sarton, Harvard University.
Dr. Reginald Fitz, Harvard Medical School.

TUESDAY, MAY 23, 1950

Morning Session

BOSTON MEDICAL LIBRARY

9:30 a. m. to 12:30 p. m.—Miscellaneous Papers.

NATIONAL NEWS

Illinois

Dr. Joseph A. Capps, Emeritus Professor of Clinical Medicine at the University of Chicago, will deliver the seventh annual D. J. Davis Lecture on Medical History at the University of Illinois College of Medicine, Chicago, on March 29, 1950. Dr. Capps will speak on the subject of "The story of pain—its mechanism and its interpretation in clinical medicine."

Maryland

The Johns Hopkins Medical History Club held its second meeting of the year on February 27, 1950, with the following program:

"St. Agatha, the patron saint of diseases of the breast."
Dr. Edward F. Lewison, Baltimore.

"Social medicine and the epidemic constitution."
Dr. Iago Galdston, New York Academy of Medicine.

New York

The New York Medical College has announced a course of lectures in which the history and development of the major segments of medical function are traced on a "vertical" pattern rather than in chronological sequence. The lectures will be held at Flower and Fifth Avenue Hospitals, Fifth Ave. and 106th St., New York City, from 4 to 5 p. m. on the following days:

March	1,	1950	"An orientation lecture," Iago Galdston.
"	8,	"	"The history of clinical medicine," Owsei Temkin.
"	15,	"	"The history of surgery," Emerson C. Kelly.
"	22,	"	"The history of psychiatry," Gregory Zilboorg.
"	29,	"	"The medicine of social life," George Rosen.
April	19,	"	"American medicine," Richard Shryock.
"	26,	"	"Social medicine," Iago Galdston.
May	3,	"	"Resumé," Iago Galdston.

The Mount Sinai Hospital held a seminar in the history of medicine on February 28, 1950, on:

"The case of President Grover Cleveland."

Joseph Ehrlich, M. D.

"The contribution of von Basch to the study of blood pressure."

Jonas H. Sirota, M. D.

Discussion: Bruno Kisch, M. D.

Ohio

The Committee on Medical History and Archives of the Ohio State Archaeological and Historical Society, a constituent society of the American Association of the History of Medicine, announces its tenth annual meeting for April 15, 1950. Dr. Jonathan Forman, Chairman, will preside over the following program:

"Samuel Hanbury Smith of Cincinnati, Columbus and Hamilton."
Dorothy M. Schullian, U. S. Army Medical Library, Cleveland Branch.

"Ohio physicians of the nineteenth century—a statistical study."
Frederick C. Waite, Dover, New Hampshire.

"The development of dermatology in Ohio."
Leon Goldman, University of Cincinnati.

"The development of hygiene and health museums, with notes on the Western Museum in Cincinnati."
Bruno Gebhard, Cleveland Health Museum.

"Body snatching in Ohio during the nineteenth century."
Linden Edwards, Ohio State University.

"James Salisbury, M. D."
Clyde Cummer, Western Reserve University.

"Interesting historical items relating to Ohio in the Medical Museum of the Army."
Thomas Haviland, Operations Museum, U. S. Army, Washington, D. C.

"Notes on early developments of roentgenology."
Otto Glasser, Cleveland Clinic.

"The medical aspects of the Miami-Erie Canal."
Louis R. Effler, Toledo.

Pennsylvania

Richard Harrison Shryock, Ph. D., William H. Welch Professor of the History of Medicine and Director of the Institute of the History of Medicine at the Johns Hopkins University, will address the Section on Medical History of the College of Physicians of Philadelphia at 8:30 p. m., April 14, 1950, on the subject of "Women in American medicine." This will be the Kate Hurd Mead Class of 1888 Lecture in Medical History of the Woman's Medical College of Pennsylvania.

Washington, D. C.

George Sarton, Professor of the History of Science at Harvard University, is scheduled to lecture on "The Incubation of Western Culture in the Middle East"

at the Library of Congress on March 29, 1950. This address will inaugurate a new series of annual lectures sponsored at the Library by the George C. Keiser Foundation.

Personalia

Dr. Lloyd Grenfell Stevenson has been named by the John and Mary R. Markle Foundation a Scholar in Medical Science in the field of medical history and preventive medicine: history of disease. The grant of $25,000 at a rate of $5,000 a year has been allotted to the University of Western Ontario Faculty of Medicine at which Dr. Stevenson holds an appointment.

Dr. George Urdang, Director of the American Institute of the History of Pharmacy, has been awarded the Schelenz Plaque, for the best publications in the field of the history of pharmacy, as well as the Urban Medal. Dr. Urdang was made an honorary member of the revived "Gesellschaft für Geschichte der Pharmazie."

NEWS FROM ABROAD

New Journals of the History of Medicine.

Archivos Iberoamericanos de Historia de la Medicina is the title of a journal published semiannually by the Consejo Superior de Investigaciones Cientificas of Madrid. The yearly volume is to have 700 pages and will contain contributions on the history of medicine, anthropology, and science. Pedro Lain Entralgo of Madrid and Anibal Ruiz Moreno of Buenos Aires are the directors of the journal and Juan Antonio Paniagua Arellano, its editorial secretary. The editorial board is composed of the following members: Carlos Ahumada, G. Araoz Alfaro, Mariano R. Castex, Guillermo Furlong, S. J., Vicente A. Risolia (Buenos Aires); Ignacio Chavez, F. Fernández del Castillo, Mario Salazar Mallén (Mexico); Honorio Delgado, Juan B. Lastres, C. E. Paz Soldán (Lima); F. Enríquez de Salamanca, Rafael Folch Andreu, Carlos Jiménez Díaz, Juan J. López Ibor, Gregorio Marañón (Madrid); C. Martínez Durán (Guatemala); Virgilio Paredes Borja (Quito); A. da Rocha Brito (Coimbra); Rafael Schiaffino (Montevideo); Manuel Usandizaga (Barcelona); Ivolino de Vasconcellos (Rio de Janeiro).

Humana Studia, Bolletino bimestrale dell'Istituto di Storia della Medicina dell'Università di Roma, is appearing in a new series under the editorship of Professor Adalberto Pazzini of Rome.

ARTURO CASTIGLIONI. *A History of Medicine.* Translated from the Italian and edited by E. B. KRUMBHAAR. Second edition, revised and enlarged. New York: Alfred A. Knopf, 1947. xxx + 1192 + lxii pp., 504 ill. $12.50.

Professor Castiglioni's book is so well known, so generally appreciated and so widely used all over the world that the new edition hardly needs a recommendation. Indeed, it probably is the most successful History of Medicine ever written. It was published in three Italian editions from 1927 to 1948, was translated into French, Spanish, Portuguese and German; a first American edition, prepared by E. B. Krumbhaar, was issued in 1941, and in spite of the war, was immediately accepted and became so popular that a new edition had to be made only six years later.

The success of the book makes it evident that it fills a gap and satisfies a real need which is felt not only in this country. Pagel-Sudhoff's authoritative history was last published in 1922. Neuburger's brilliant presentation, unfortunately, was never completed. Garrison's book, once the bible of American medical historians and librarians, and still a very useful book, has been out of print for some time. The French history of medicine in three large volumes edited by Laignel-Lavastine is a picture book and a collection of essays of very unequal value rather than a history. Victor Robinson's and Guthrie's books are good short presentations, for students rather than scholars. Here then comes Castiglioni's *History* hitting a happy medium, a one-volume book not too long to be read by students and doctors and yet long enough to be studied profitably by specialists and general historians.

It is a brilliantly written book which reads very fluently not only in the Italian original, but also in the present English version of Krumbhaar. It traces the development of medicine from the early beginnings to our days. The emphasis is on the history of medical science, of ideas, discoveries and achievements. General cultural backgrounds, the history of diseases, of health conditions in general, of the patient and of medical practice are mentioned but not fully developed. It is not a social history of medicine, and does not intend to be, but gives an excellent picture of the development of the physician's knowledge, and this, after all, is what most readers expect of such a book.

The new edition is enlarged considerably. The section from 1850 on has been rewritten entirely and runs now to nearly four hundred pages. The more than five hundred illustrations are well selected and well reproduced. The bibliographies at the end of the book are very useful, and there are good indices.

Castiglioni's *History*, in its second edition, will undoubtedly find many new friends in the whole English-speaking world, and I have no hesitation to say that it is the best presentation of the dramatic story of medical science available today.

HENRY E. SIGERIST

MORRIS FISHBEIN. *Medical Writing, the Technic and the Art.* Second edition. Philadelphia-Toronto: The Blakiston Company, 1948. x + 292 pp. Ill. $4.00.

The content of this book covers every aspect of medical writing from style to proofreading and indexing. Since the book represents the editorial policies adopted by the publications of the American Medical Association, a part of the book records practice rather than rules of general validity. To cite a few examples: There is room for argument as to whether all the preferred endings of adjectives (p. 88) are really preferable. Many publications, as is well known, put references at the end of the paper rather than in footnotes under the text. Some readers will feel uncomfortable when encountering such "accepted" English plurals as "anlages" and "dictums." These examples make one wonder whether the enforcement of hard and fast rules is altogether desirable. Obviously, publications like the *Journal of the American Medical Association* cannot allow unlimited liberties. But the reader who wants to inform himself on the technic and art of medical writing rather than make his paper acceptable for publication in a special journal may well reserve his right to independent judgment.

Apart from these qualifications, the book can be highly recommended, since prospective authors as well as their editors will profit from its wide circulation. There are valuable hints about the external aspect of manuscripts (is there any editor who would not wish it generally known that the manuscript of text *and* footnotes should be typed in double space with liberal margins?). There is much useful information (e. g. about signs used in correcting proof, various abbreviations, descriptive terms for eponyms); and, above all, there are some necessary remarks on grammar and words and phrases. Dr. Fishbein should be cheered for pointing out that "the word 'data' is a plural noun. Never, *never,* NEVER write 'the data *is*'" (p. 42), and that abstract words (such as pathology) should not be used in a concrete sense.

The book is obviously intended for writing that deals with "scientific" or clinical aspects of medicine. Nevertheless, the medical historian will also profit by a careful study of the book. While he may have to deviate from some rules and find additional information elsewhere, he will not fail to learn from it that content, style, and form deserve equal emphasis in the interest of good writing.

OWSEI TEMKIN

R. SCOTT STEVENSON and DOUGLAS GUTHRIE. *A History of Oto-laryngology.* Baltimore: The Williams and Wilkins Company, 1949. vii + 155 pp. Ill. $5.00.

This authoritative and well-written monograph, abundantly documented by portraits and contemporary illustrations of procedures and instruments, is the first history devoted solely to otolaryngology. Chapter headings are an index of scope far beyond the limits of so short a work: Ancient History; The Middle Ages and the Renaissance; Otology becomes a Science; The Education of the Deaf; Laryngology in the Nineteenth Century; and Modern History. Excellent short biog-

raphies of leaders in the specialty and accounts of the founding of their institutions are accompanied by descriptions of the origins of modern techniques. Bibliography and index are comprehensive and accurate.

RALPH A. FENTON

JUDITH ROBINSON. *Tom Cullen of Baltimore.* London, Toronto, New York: Oxford University Press, 1949. xii + 435 pp. Ill. $3.50.

Most portrait painters consider it a compliment to their work if it is considered to be lifelike and accurate. Using such criteria, Judith Robinson has reason to be proud of the biography she has written. *Tom Cullen of Baltimore* is the man in the flesh as those who know him will find on reading this book. This is no mere accumulation of dates and facts. T. S. Cullen lives through every page.

The first part of the biography deals with Cullen's childhood and youth spent in Canada. In the growing boy, Miss Robinson points out characteristics which are later to become outstanding in adult life. Incidently, in the first 50 pages the author gives us a vivid picture of life in Canada during the pioneer days.

It is, however, that part of the book which starts with Tom Cullen getting off the train at Union Station on the morning of September 22, 1891, which is of particular interest to those who have known him in Baltimore. From that point on, the story deals not only with the life of the man but with the early development of the Johns Hopkins Hospital and Medical School. The reader becomes acquainted with Hopkins' four immortals and with many others who brought fame to the institution.

Cullen was a scientist who worked under the great pathologist, William Welch, and he himself made many scientific discoveries. He was the author of numerous scientific and clinical articles and completed four books dealing with gynecological subjects. These books, while published many years ago, are still used for reference all over the world. He has been and is a great teacher, heading for many years the gynecological department of the Johns Hopkins Medical School.

However, in no field did Cullen reach greater eminence than in the practice of clinical gynecology. For years he has had a large private gynecological practice. This gives him opportunity not only to use his great surgical skill, but to deal with human beings and have them as his own patients. Many of them have become not only grateful patients, but close personal friends of Tom Cullen.

His has been an interest not limited to the laboratory or operating room, but extending to the sick no matter where they are or what is their condition. He is a living refutation to those who claim that it is necessary to direct all of one's energy down one avenue to attain success. Cullen, judged by his accomplishments, seems to have given his "full time" to many fields.

The man's interests are not limited to medical subjects. He has been a citizen of Baltimore in the true and best sense of the word, entering into all of the city's activities. For years he has served as president of the board of Baltimore's Public Library system giving his time unstintingly to all the problems that have arisen in connection with the library itself and the training of librarians.

Judith Robinson has written of Cullen's many activities in a most interesting manner. The story is told chronologically so far as it is possible, but sometimes

the author has departed from this plan and gathered in special chapters parts of Cullen's achievments that could be presented together. The publishers have brought out the book in an attractive form. The print is large and good. The illustrations are of interest.

While possessing a brilliant and well arranged mind, Cullen himself would agree that it is to unusually hard work and long hours that much of his success has been due. One wonders if when socialized medicine with its accompanying regimentation is fully upon us, that era will produce many "Cullens."

LEO BRADY

CLAUDE BERNARD. *An Introduction to the Study of Experimental Medicine.* Translated by HENRY COPLEY GREENE, with an Introduction by LAWRENCE J. HENDERSON. Henry Schuman, 1949. xix + 226 pp. $3.00.

Claude Bernard's *Introduction à l'étude de la médecine expérimentale*, published in 1865, has become a classic, expressing a medical philosophy still very much alive today. The English translation first appeared in 1927, and so great was the demand for the book among English-speaking readers that its supply was soon exhausted. The publisher is to be congratulated for having brought out the present reprint (together with Henderson's introduction and Paul Bert's éloge of Claude Bernard of 1878) at a reasonable price. He has thereby filled a real need and we hasten to bring the book to the attention of our readers.

OWSEI TEMKIN

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